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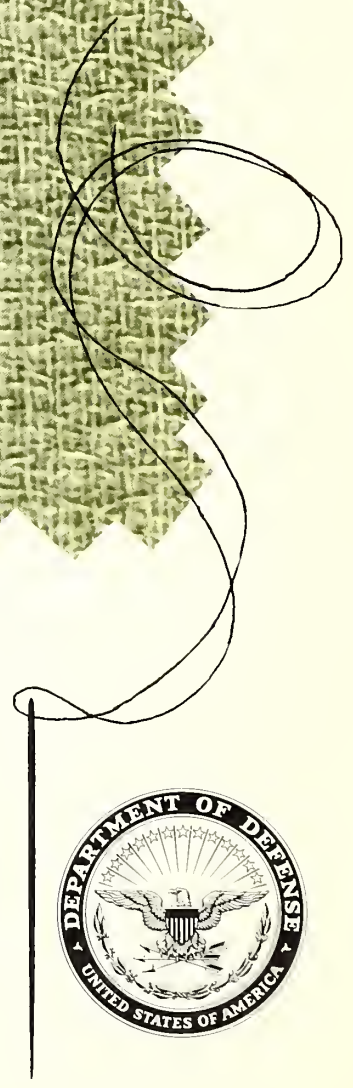
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JANUARY, 1970

# CIVIL DEFENSE

## in the Textile, Apparel, and Related Industries



Published by the  
**U.S. DEPARTMENT OF COMMERCE,**  
Business and Defense Services Administration  
in cooperation with the  
**DEPARTMENT OF DEFENSE,**  
Office of Civil Defense







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## **A Message to Management of the Textile, Apparel, and Related Industries**

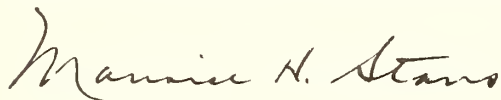
The American textile, apparel, and related industries make vital contributions to national well-being and defense. Their production would be crucial in time of national emergency.

The civil defense program—sustained jointly by Federal, State, and local governments—is a nationwide effort to protect life and property in a national emergency and to provide for the early restoration of production. American companies strengthen this effort with preparations to safeguard their managerial capability, work force, and facilities under disaster conditions, and to assure rapid recovery.

To help executives and managers in the textile, apparel, and related industries develop emergency preparedness plans for their companies, the Business and Defense Services Administration, U.S. Department of Commerce, has prepared this manual in cooperation with the Office of Civil Defense, Department of Defense.

Industry leaders and major trade associations provided valuable assistance to make the manual responsive to the needs.

Our survival in a national emergency will depend upon well-coordinated action by Government, industry, business and individual citizens, and a viable economy sustained by a strong industrial base. Industrial preparedness is essential to effective national preparedness.

A handwritten signature in cursive script, reading "Maurice H. Stans".

Secretary of Commerce



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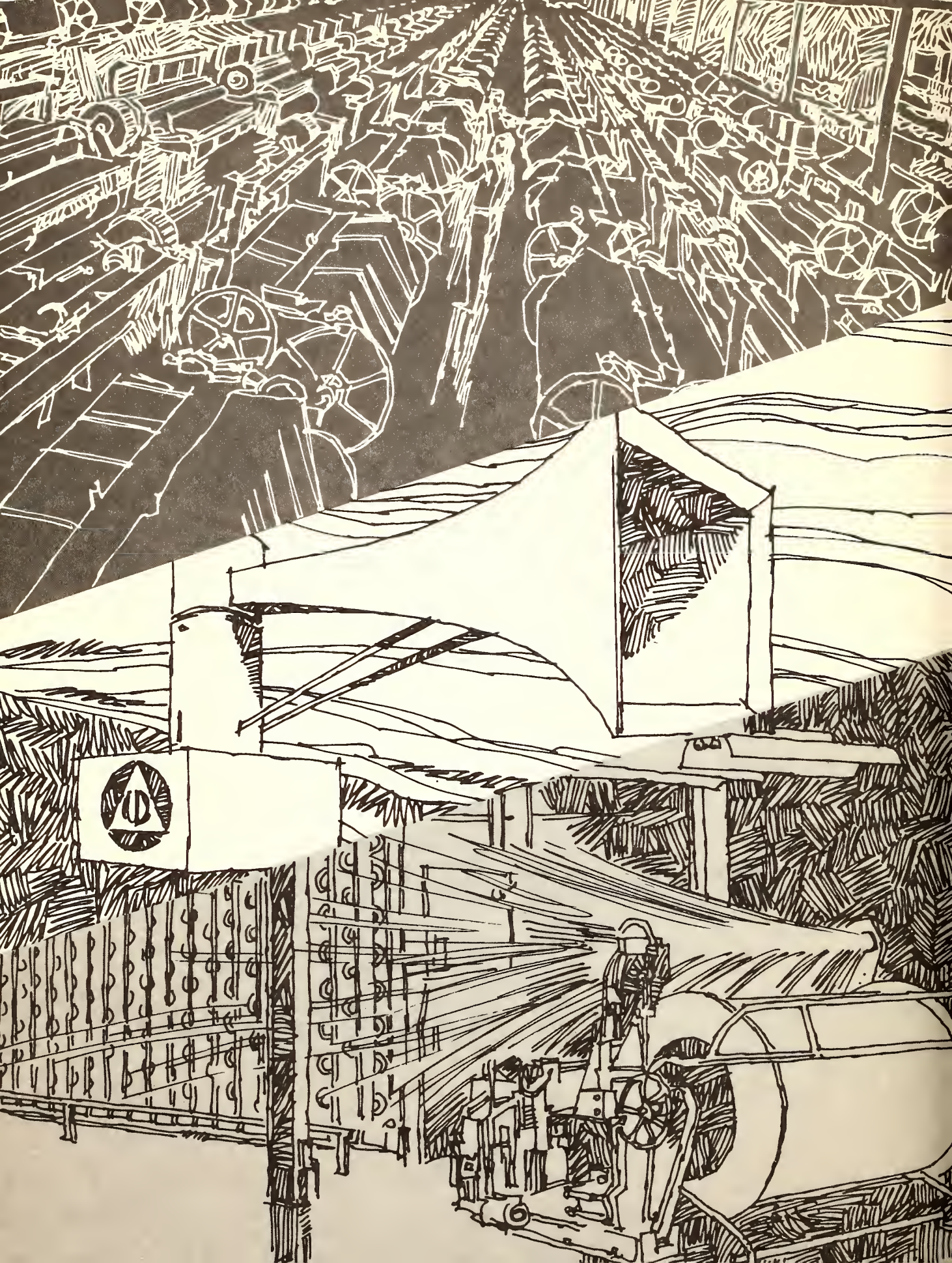
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The Congress has supplemented the military defense of the United States with a civil defense system for the protection of life and property in the event of an attack. It has defined civil defense to mean all those activities and measures designed or undertaken:

TO MINIMIZE THE EFFECTS OF AN ATTACK ON THE CIVILIAN POPULATION OF THE UNITED STATES.

TO DEAL WITH THE IMMEDIATE EMERGENCY CONDITIONS CREATED BY ANY SUCH ATTACK.

TO EXPEDITE THE RESTORATION OF VITAL UTILITIES AND FACILITIES DESTROYED OR DAMAGED BY ANY SUCH ATTACK.

The term *attack* includes "any attack or series of attacks by an enemy of the United States causing, or which may cause, substantial damage or injury to civilian property or persons in the United States in any manner by sabotage or by the use of bombs, shellfire, or atomic, radiological, chemical, bacteriological, or biological means or other weapons or processes." (Federal Civil Defense Act of 1950, as amended; Section 3.)

Studies conducted for the Department of Defense indicate that the threat to the United States posed by chemical and biological agents is relatively less significant than the nuclear threat. Chemical agents are not considered a major strategic threat, because they are effective mainly against tactical targets of limited area. Although the possibility that biological agents might be used against U. S. population centers cannot be ruled out, neither a chemical nor biological threat against the continental United States warrants, at this time, the attention and priority given to defense against the effects of nuclear weapons.

Textile industry management has generally taken precautionary steps to minimize personnel and property losses due to such disasters as fires, explosions, floods, hurricanes, and earthquakes. Now, management should take the additional protective measures outlined in this manual to minimize the effects of nuclear weapons and resume production as quickly as possible in case of an attack on the United States. Such action is good insurance.

A large share of the task of building an effective civil defense rests on industry and business, since they provide the materials and tools for national defense and the goods and services essential for survival in case of attack, and for recovery afterward.

# ORIENTATION TO CIVIL DEFENSE

## BASIS OF THE CIVIL DEFENSE PROGRAM

The blast and heat effects of nuclear weapons, while similar in nature to conventional weapons, are enormously increased in power. Nuclear weapons pose the added threat of radioactivity. The effects of nuclear weapons differ from those of conventional weapons in the following principal ways:

Nuclear explosions may be many thousands (or millions) of times more powerful than the largest conventional detonations. An experimental nuclear device exploded at Eniwetok in October 1952 had an estimated yield of more than 10 megatons (MT), i.e., it released more energy than the explosion of *ten million tons* of TNT.

A fairly large proportion of the energy in a nuclear explosion is emitted in the form of light and heat, generally referred to as "thermal radiation." It is capable of causing skin burns and of starting fires at considerable distances.

The nuclear explosion releases a burst of highly-penetrating and harmful invisible rays, called "initial nuclear radiation." The initial radiation effect is overshadowed by blast and fire effects, which can cause almost total destruction within a radius considerably larger than that which is seriously affected by initial nuclear radiation.

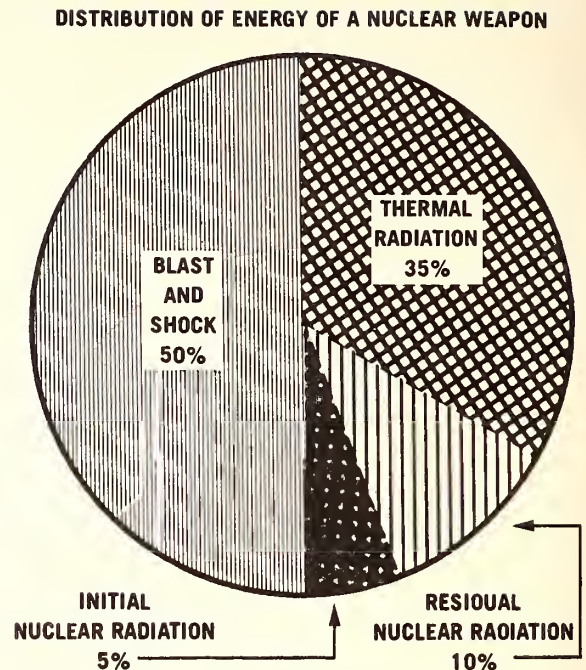
If a mushroom cloud is produced and matter falls back to earth after a nuclear explosion it will emit harmful radiation over an extended period of time. This is known as the "residual nuclear radiation" and includes the effect known as radioactive fallout.

Figure 1 shows the distribution of energy in a typical nuclear weapon. Figure 2 shows the effects of 5 and 20 megaton surface nuclear blasts respectively. Figure 3 shows radioactive fallout patterns.

## RADIOACTIVE FALLOUT

In a surface burst, large quantities of earth and debris enter the fireball at an early stage where they are fused or vaporized and drawn up into the nuclear cloud. When sufficient cooling has occurred, the fission products and other radioactive residues condense on the earth particles. The contaminated particles gradually fall back to earth. This is fallout. The fallout particles emit harmful gamma radiation, which is measured in units called roentgens. For exposed persons a dose of more than 200 roentgens could

Figure 1.



cause disabling illness and some deaths. At 450 roentgens, there is a 50-50 probability of death and few persons would survive a dose of more than 600 roentgens.

In an air burst (one in which the fireball does not touch the ground) debris does not lend weight to the radioactive particles and so they stay aloft for a long period of time. If they eventually return to earth, their radioactivity will have diminished to a harmless level.

In an all-out nuclear attack against military, industrial and population centers severe to moderate damage from the *blast* and *heat* effects would occur in about two percent of the nation's area. In addition, radioactive *fallout* would be expected to spread over about seventy-five percent of the land area of the United States in varying intensities, contaminating many places for periods ranging from hours to weeks, with potentially fatal or disabling effects on the population.

Although the direct effects of a large-scale nuclear attack could cause millions of casualties, tens of millions of Americans would survive the radiation effects if adequate fallout shelters were available to them.

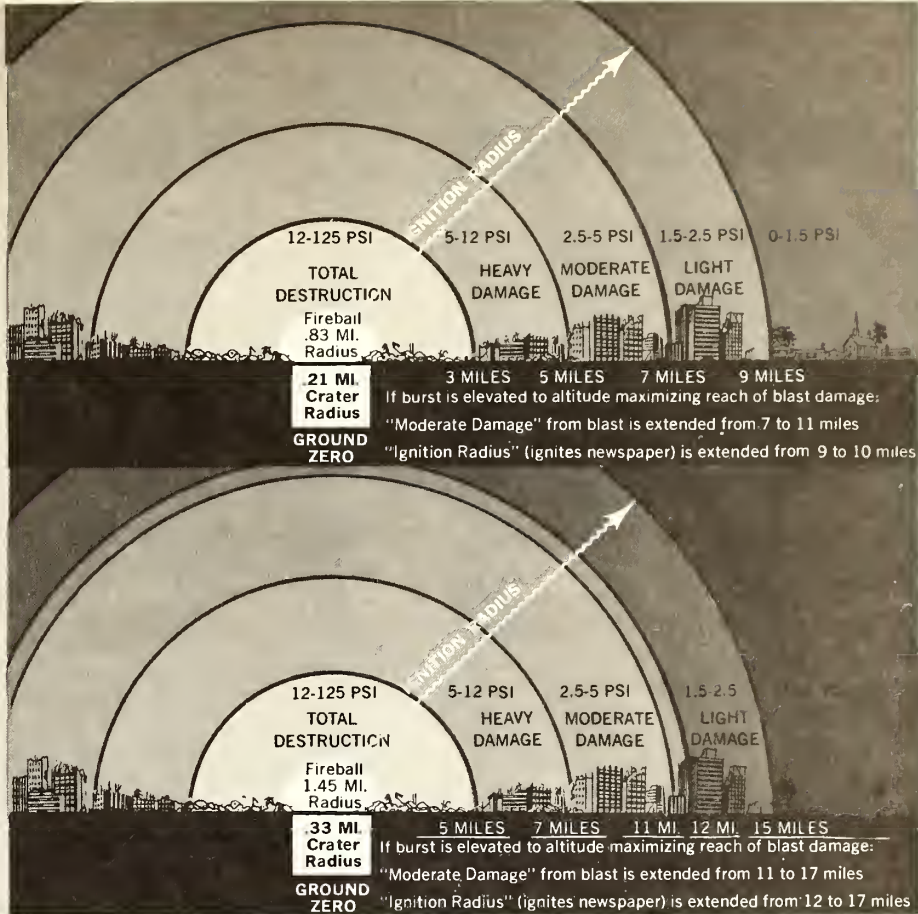


Figure 2.

**THE EFFECTS OF NUCLEAR ATTACK**

**EFFECTS OF A 5-MT BLAST**

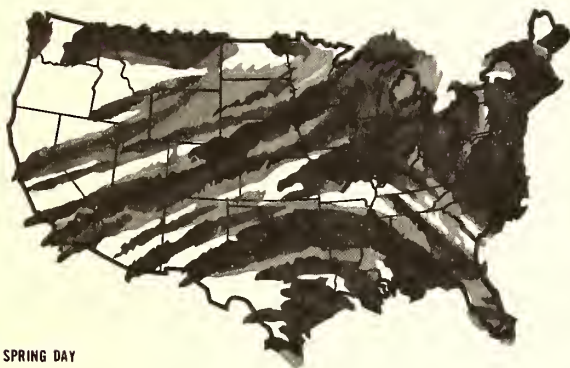
People close to the detonation, within 3 miles of ground zero, are not likely to survive the blast and thermal effects. Out from the total destruction ring, chances for survival improve markedly. The percentage of the population surviving blast and thermal effects increases rapidly as the distance from ground zero increases, but a large portion of the survivors would be exposed to the lethal effects of radioactive fallout.



**EFFECTS OF A 20-MT BLAST**

While this amounts to a fourfold increase in megatonnage over the five-megaton weapon the same blast and thermal effects occur at less than twice the distance from ground zero. As in the case of the five-megaton weapon, millions of people could survive these initial effects.

Figure 3.



SPRING DAY



FALL DAY

**RADIOACTIVE FALLOUT PATTERNS**

Assuming a random attack against a wide range of military, industrial and population targets, fallout will be distributed over very large areas of the country. The actual area affected will depend on the season, wind conditions and other variables, but no area can be designated as safe.

The maps show the geographic distribution of various levels of radioactivity resulting from an assumed attack. Targeting variables included such matters as how war starts, enemy abort rates from malfunctions, attrition of incoming weapons from U.S. military action, duration of attack, weapons accuracy, and upper wind direction and velocity.

About 75% of the land would be covered with dangerous levels of radioactive fallout if average winds prevailed. Areas could virtually all be covered under different wind conditions.

The darkest areas would require a week or two weeks stay in shelters. Less dark areas would require two days to one week. The light areas would require shelter only for the first day or two.

Much of the area which was free of fallout with the spring day winds is covered with serious amounts of fallout under the fall day conditions.

Even if targets, enemy intentions and offensive capabilities could be accurately predicted, the winds as of any day on which a potential attack might occur, could not be so predicted. Therefore we must plan on providing fallout protection everywhere.

- No shelter required under this wind condition
- Up to 2 days shelter occupancy
- 2 days to 1 week shelter occupancy
- 1 week to 2 weeks shelter occupancy followed by decontamination in exceptional areas

## NATIONAL FALLOUT SHELTER PROGRAM

The civil defense program is based on the premise that, if the country is ever subjected to a nuclear attack, more lives can be saved at less cost with a nationwide fallout shelter system than by any other single defense system. Testifying before the Armed Services Committee of the House of Representatives in January 1964, the Secretary of Defense stated in part:

“Civil Defense is an integral and essential part of our overall defense posture. I believe it is clear from my discussions of the Strategic Retaliatory and Continental Air and Missile Defense Forces that a well planned and executed nationwide civil defense program centered around fallout shelters could contribute much more, dollar for dollar, to the saving of lives in the event of a nuclear attack upon the United States than any further increases in either of those two programs . . .”

The Federal Government conducts a continuing *nationwide survey* to identify the fallout shelter space available in existing public and private buildings. The survey identifies fallout shelter areas that have:

SUFFICIENT PROTECTED SPACE TO ACCOMMODATE AT LEAST 50 PEOPLE.

A MINIMUM OF 10 SQUARE FEET OF FLOOR SPACE PER PERSON.

AN ADEQUATE SUPPLY OF FRESH AIR.

A PROTECTION FACTOR OF AT LEAST 40 (SEE FIGURE 4).

Since 1962, the Office of Civil Defense has encouraged the inclusion of radiation protection design in all new buildings. The civil defense goal is fallout shelter for everyone, wherever they may be at the time of an attack.

If the shelter space is licensed for public use, it is marked and stocked with supplies, which include sanitation equipment, food, water containers, medical supplies sufficient for up to 2 weeks occupancy, and radiological monitoring equipment.

Not all industrial buildings with adequate shelter will be designated for use as public fallout shelters. For example, the structure may be located in an area that has more than enough public fallout shelter with higher protection factors. In another instance, the operations carried on within the facility may constitute hazards that preclude the facility's use by the public in a civil defense emergency. The emergency

plans of such a facility should, in any event, include preparations for use of fallout shelter within the facility by the employees who work there. Such a facility may be stocked as a public shelter if the community shelter plan provides that, in an emergency, the shelter would be occupied by the regular occupants of the facility. The company's emergency coordinator should consult the local civil defense director about this and other aspects of the role his facility will take in the community shelter plan. If the facility is not licensed as public shelter, the company should plan to stock it with the basic essentials for survival of the employees who will use the protected space.

As a result of the National Fallout Shelter Survey, millions of shelter spaces have been located in existing buildings and have been licensed, marked, and stocked for use by the public in the event of an enemy attack. But additional shelter spaces are needed. The Office of Civil Defense has, therefore, undertaken the following additional measures to provide them:

*A small structure survey* involves the analysis of small office and business buildings, churches, shopping centers, and apartment buildings which may have suitable fallout shelter space with a capacity of not less than 10 people per area but which, under a single cover will aggregate at least 50 people.

*A home fallout protection survey* is being conducted in cooperation with the Census Bureau and various States to identify additional shelter spaces in one, two, and three-family houses. More than 25 million homes in the Nation have basements, which may provide a substantial amount of fallout protection.

*A professional development program for architects and engineers* develops a capability for radiation protection design and analysis. This capability is available in many architectural and engineering firms. The Office of Civil Defense has published a “National Directory of Architectural, Engineering, and Consulting Firms with Certified Fallout Shelter Analysts” (FG-F-1.3) which is available from local civil defense directors.

*Advisory service in radiation protection design techniques* is available to architectural and engineering firms as well as building owners not having a capability in fallout shelter analysis. This service may be requested through State or local civil defense offices. In the design of new buildings or in modifications and additions to existing



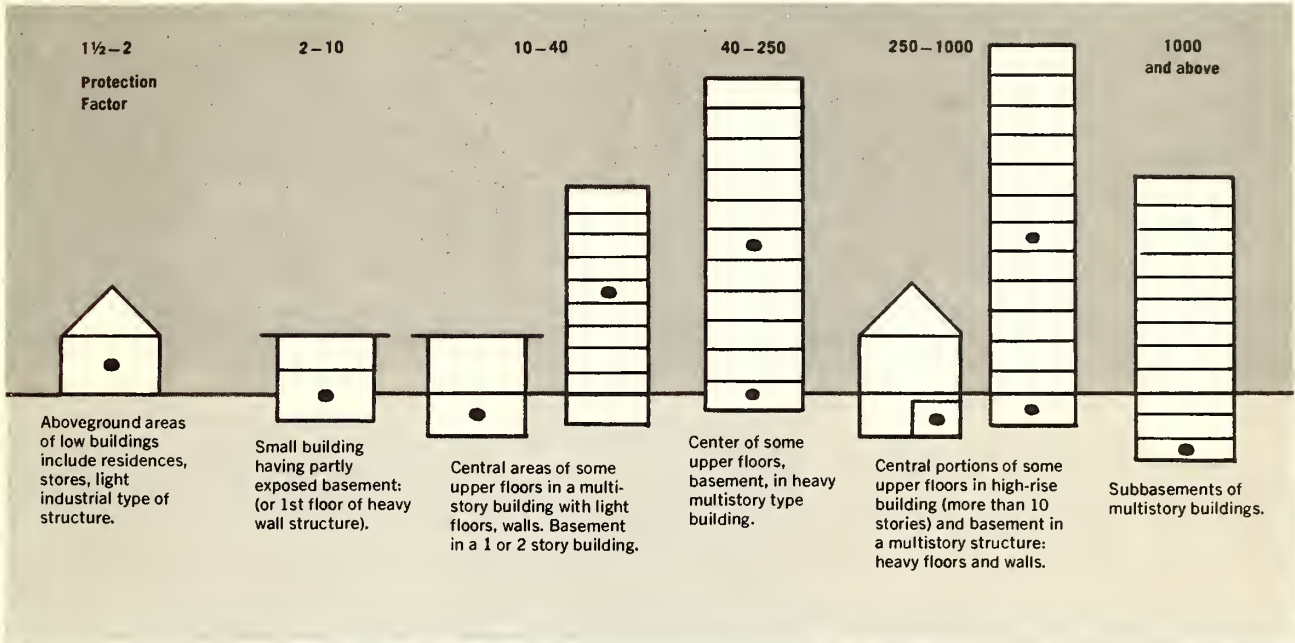
Figure 4.

**PROTECTION FACTORS**

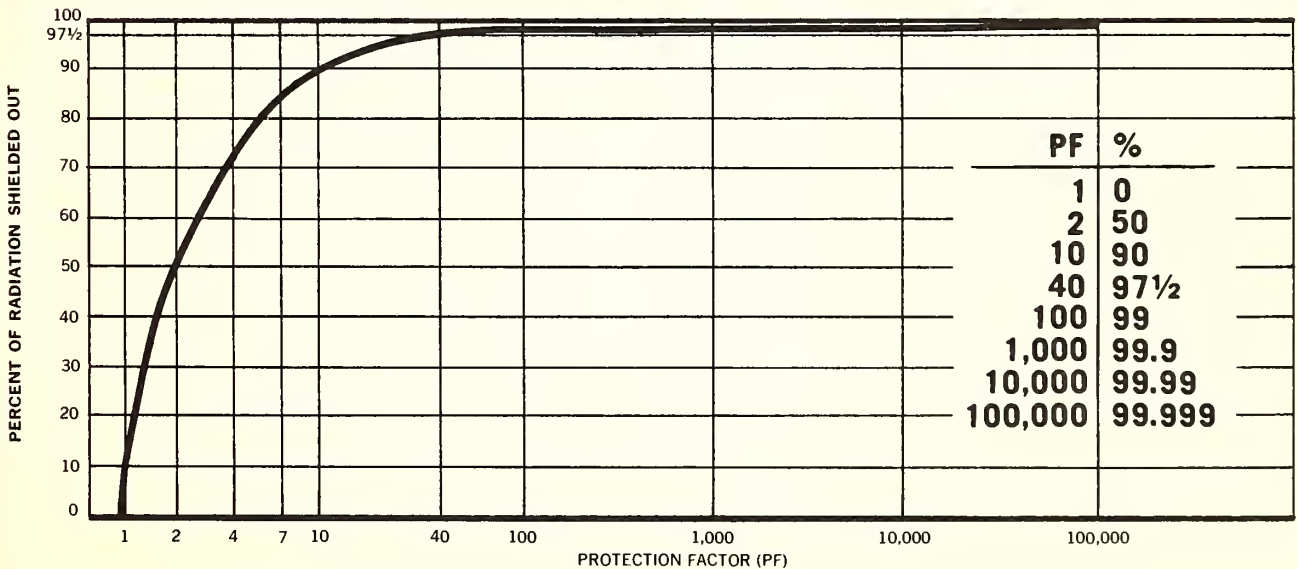
**PROTECTION FACTOR (PF)** expresses the relation between the amount of gamma radiation that would be received by an unprotected person compared to the amount that would be received by one in a shelter. For example, an occupant of a shelter with a PF of 40 would be exposed to a dose rate 1/40 (or 2½%) of the rate to which he would be exposed if his location were unprotected.

**EVERY BUILDING PROVIDES SOME DEGREE OF SHELTER**

The inherent shelter normally provided by various building types is shown by this chart. Likely shelter locations in any building are those offering highest protection factors. The diagram below gives a general idea of the relative protection found in common structures. Use it as a guide to estimate protection against fallout. The PF values listed may be conservative being based on isolated structures.



**A PROTECTION FACTOR OF 40 SHIELDS OUT 97 1/2% OF RADIATION**





A.

*A. Company and county civil defense officials inspect fallout shelter supplies at Cone Mills Corporation's Revolution Plant, which provides shelter for 1,124 persons.*

*B. Burlington Industries, Inc., provides fallout shelter for employees and the public.*

*C. Public fallout shelters in this Walter W. Moyer Company building are stocked for 1,200 people.*

*D. The civil defense coordinator for Munsingwear, Inc., says there are more than 2,700 fallout shelter spaces for employees and the public in this building.*



B.



C.



D.

*All photographs by U. S. Army, except where otherwise credited.*



ones, increased fallout protection can often be provided at little or no additional cost. These techniques, which enhance the fallout protection inherent in the structure without adversely affecting the building's appearance or its intended use, are generally applicable in the design of new buildings or major expansions or modifications of existing structures. The service is provided through seminars, recommendations based on review of design plans, or personal consultation at no cost to the architect or owner.

*A community shelter planning (CSP) program* designed: to ensure that all potential fallout shelter resources in a community are identified and coordinated so they can be used effectively in an emergency; to match people to the best protected space available—both to public shelters locally available and other suitable space; to see that everyone knows where to go and what to do in case of nuclear attack; to define areas in which more shelter is needed; and to serve as a basis for local action to develop additional shelters, and for periodic updating of local civil defense plans.

Community shelter planning involves Federal, State and local government efforts; but its success will be determined largely by the extent to which the community becomes involved in it. The program provides for bringing the local government's emergency operating plans (including those of the local police, fire, public works, shelter management, radiological monitoring, and emergency health and welfare organizations) into conformity with the community fallout shelter plan.

## RADIOLOGICAL MONITORING SYSTEM

Radiological monitoring is a necessary adjunct to the national fallout shelter system. Radiological monitors are trained and equipped to identify and measure radiation hazards following a nuclear attack.

This radiological monitoring capability consists of approximately 68,000 monitoring stations with trained personnel, located at fire and police stations, airports, hospitals, and the field offices of Federal Government agencies.

The radiological fallout monitoring capability recommended for the textile, apparel, and related industries is discussed in Chapter II, "COMPANY PREPAREDNESS PROCEDURES."

## CIVIL DEFENSE WARNING SYSTEM

To carry out their warning responsibilities, the Federal, State, and local governments, working cooperatively, have established and maintain and operate a nationwide civil defense warning system.

The Federal portion—which serves the continental United States—is called the "National Warning System (NAWAS)." It operates three National Warning Centers manned 24 hours daily by attack warning officers and utilizes nearly 45,000 miles of private-wire telephone circuits that link the warning centers with nearly 1,000 warning points that serve all of the States and their principal political subdivisions.

The National Warning Center is located in the North American Air Defense Command (NORAD) Headquarters in Colorado Springs, Colorado, where information concerning impending attack is immediately available. Two alternate warning centers at Denton, Texas, and Washington, D.C., can assume the functions of the National Warning Center if necessary.

NAWAS warning points are strategically located throughout the continental United States. Since NAWAS operates on a 24-hour-a-day schedule, NAWAS warning points must be manned continuously. For this reason, State and municipal police stations and fire stations are generally selected for warning points. In addition, operating personnel at

Figure 5.

<b>Fallout Shelter Inventory</b>		<b>Structures</b>	<b>PF 40 + Shelter Spaces</b>
	<b>The fallout shelter inventory (as of November 25, 1969) is as follows:</b>	<b>Larger structures surveyed</b>	<b>198,126</b>
	<b>Licensed by mutual agreement</b>	<b>120,860</b>	<b>123,392,000</b>
	<b>Marked by shelter signs</b>	<b>108,662</b>	<b>105,368,000</b>
	<b>Stocked with essential supplies</b>	<b>101,169</b>	<b>60,933,000</b>
	<b>Rated capacity of stocked facilities</b>		<b>99,621,000</b>
	<b>Smaller structures surveyed</b>	<b>107,613</b>	<b>2,526,044</b>

these locations are already trained and accustomed to handling messages of an emergency nature. Most NAWAS warning points are responsible for warning an area assigned to them by the State. In addition to the dissemination of warnings, they are responsible for providing OCD regional headquarters or warning centers with flash information concerning nuclear detonations, initial damage estimates, fallout, downed aircraft, natural disasters, and similar incidents.

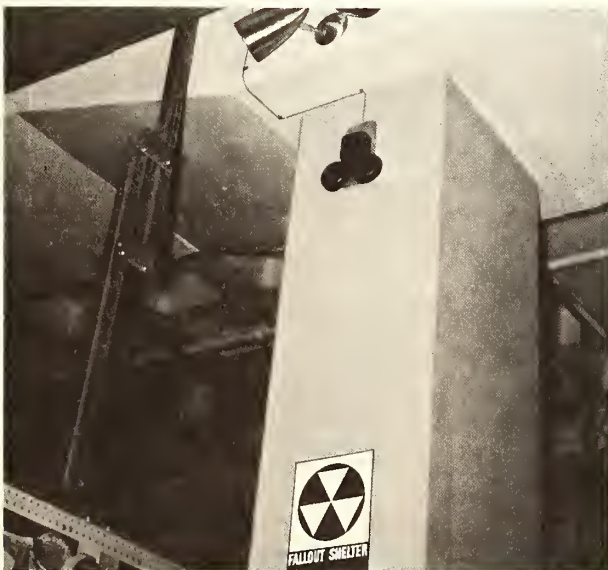
In every State, one NAWAS warning point is selected as the State Warning Point and assigned responsibility for control of NAWAS within the State. The State Warning Point is also responsible for relaying emergency information to the appropriate OCD regional headquarters.

Extensions from NAWAS are available to State and local civil defense authorities. These extensions provide direct warning to those locations that cannot qualify as NAWAS warning points, yet are considered by State and local governments as important terminals in their warning systems.

In Hawaii, the warning system extends to two warning points by telephone, and from there by radio to warning points in Guam and American Samoa. In Puerto Rico, the warning system extends to four warning points, including one in the Virgin Islands.

The State portions of the civil defense warning system have been established by the respective States to relay warnings received over NAWAS to locations

**Emergency alarm bells are part of plant warning system at Walter W. Moyer Company, Inc.**



in political subdivisions not served directly by NAWAS.

Facilities used for relaying warnings differ from State to State. Most States use public service radio systems, i.e., police, highway, and similar departmental networks. Others use telephone, teletype, or special systems such as bell-and-lights. County sheriff radio nets are generally linked to the State systems and spread the warning through their areas of jurisdiction.

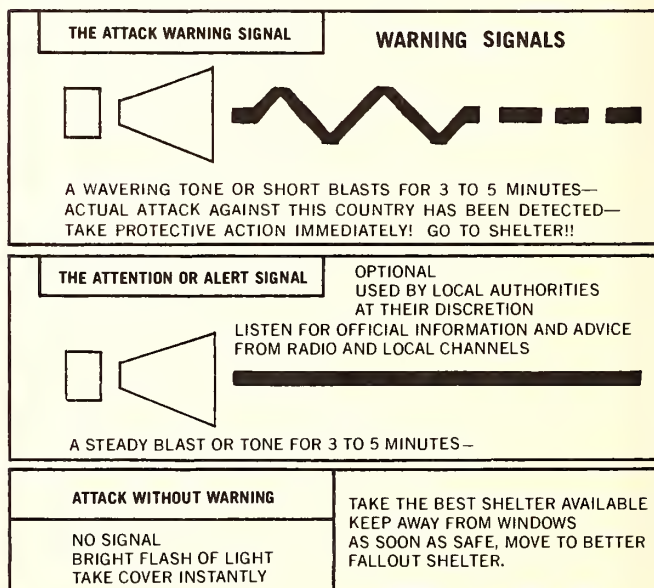
Local warning systems consist of the facilities used to alert local government officials, institutions, industrial facilities, schools, etc., and devices to warn the public, e.g., sirens, horns or whistles.

### Warning Signals

The attack warning signal is a 3-to-5-minute *wavering* tone on sirens, or series of short blasts on horns or other devices, repeated as deemed necessary (see figure 6). The attack warning signal means that an actual attack against the country has been detected and that protective action should be taken immediately. It has no other meaning.

The *attention or alert* signal is a 3-to-5-minute *steady* tone on sirens, horns, or other devices. This signal may be used, at the option of local government officials, to get public attention in times of peacetime emergency, but it always means "listen for essential emergency information" (see figure 6).

**Figure 6.**







*Emergency planners at Munsingwear, Inc., discuss company preparations for receiving civil defense information from the Emergency Broadcast System.*

## **Emergency Broadcast System**

The Emergency Broadcast System (EBS) provides the President and the Federal agencies, as well as State and local governments, with a means of communicating with the general public through commercial broadcast stations during the periods preceding, during, and following an enemy attack. Communications from such sources might include:

Messages from the President or other officials.

National, regional, State, and local area instructions.

News and information.

Upon implementation of the Emergency Broadcast System plan in a national emergency, those commercial broadcasting stations holding National Defense Emergency Authorizations issued by the Federal Communications Commission will remain on the air at their regular broadcasting frequencies to transmit official information and instructions. All other broadcasting stations will leave the air.

## **Industry's Role**

During *peacetime*, or in a limited war condition when a national emergency has not been officially declared, industry is expected to:

Cooperate with the government by developing preparedness plans.

Accept and perform contracts on a priority basis for defense, atomic energy, space, and other national security programs, in compliance with the Defense Production Act and the Defense Materials System.

During a *limited war* condition where a limited national emergency has been officially declared, industry would be expected to:

Fulfill defense, atomic energy, space and essential civilian programs in cooperation with the government.

Comply with Federal regulations relating to industry production, construction, and the use of industrial resources.

Distribute certain materials and products in compliance with Federal regulations.

Intensify preparedness activities.

During a *general war* (nuclear or conventional) when a national emergency or state of war has been officially declared or an attack has taken place, industry would be expected to:

Cooperate with appropriate government authorities in operating facilities in accordance with the guidelines set forth by the Federal Government for the survival, restoration, and rehabilitation of the Nation.

Provide essential goods and services at levels needed to support national objectives.

Curtail the operation of plants and facilities engaged in nonessential activities and, to the extent practical, convert them to essential uses.

Comply with government rules and regulations relating to production, distribution, acquisition, and use of resources.

In a "cut-off" situation where Federal guidance is temporarily unavailable, accept direction from the States and their political subdivisions until effective Federal direction and control are re-established.







# COMPANY PREPAREDNESS MEASURES

The executives and managers of the textile, apparel, and related industries should be responsible for:

ASCERTAINING THE READINESS REQUIREMENTS OF THEIR FACILITIES.

PROVIDING FALLOUT SHELTER FOR EMPLOYEES AND THE PUBLIC.

ENSURING CONTINUITY OF MANAGEMENT CAPABILITY.

ORGANIZING AND SUPPORTING AN INDUSTRIAL MUTUAL-AID ASSOCIATION.

INITIATING AN EFFECTIVE COMPANY DISASTER CONTROL PROGRAM.

To determine the readiness requirements of a mill, the company management should consider its vulnerability to nuclear attack and other disasters. In analyzing the vulnerability of individual mills and plants to destruction of life or property as a result of enemy action, it may be convenient to think of several types of vulnerability—environmental, internal and economic. All of these must be considered as a basis for estimating the likelihood that a given mill or plant may be damaged either by the direct effects of a nuclear weapon, especially blast and fire damage, or the indirect effects of attack at a more distant point. Fallout and loss of power are examples of such indirect effects.

A plant or mill may have environmental vulnerability simply by reason of its location in or adjacent to an important industrial complex or its proximity to a major military installation or other military target.

Emergency plans for the textile and apparel industries should give particular attention to the internal factors affecting the vulnerability of their facilities. Such internal factors include: (1) nature of the facility construction and the availability of shelter; (2) combustibility of materials; (3) processes and materials that would be hazardous under attack conditions or which might generate hazardous byproducts; and (4) physical arrangements of space and equipment in relation to exits and passageways required for the mass movement of employees to shelters.

The management of facilities that show a high degree of vulnerability should plan to take corrective action as soon as possible.

An effective method for protecting our economy and ensuring national survival is *industrial dispersion*, which means thinning out concentrations of industrial plants so as to minimize the economic effects

of an attack. By multiplying the number of targets an enemy must hit to inflict the same total damage, industrial dispersal tends to reduce the total effects of attack on the nation's productive capability.

*Deconcentration* refers to the geographic decentralization of the production of critical items so that their manufacture will not be limited to a single location. Such decentralization can deny an enemy the opportunity to inflict overwhelming injury to a specific production capability with a single weapon. Decentralization may be desirable not only for production lines, but also for management and technical offices, and other departments concerned with the production of an item.

## **FALLOUT SHELTER FOR EMPLOYEES AND THE PUBLIC**

Plans for new buildings should include protected areas that can be used as fallout shelter. The architect can accomplish this objective by the use of radiation protection design techniques that achieve optimum shelter at little or no additional construction cost.

All companies are urged to cooperate with the Federal Government in the national shelter program by allowing their buildings and facilities to be surveyed to ascertain whether they contain shelter space that has a protection factor of at least 40 (i.e. occupants receives no more than 1/40 of the outside radiation).

Companies having space that meets the established criteria for protection, area, and ventilation are urged to enter into an agreement to allow its use as public shelter by signing the "Fallout Shelter License or Privilege" form.

Each company should provide fallout protection on the premises for all of its employees. If this is not feasible, public fallout shelter in nearby buildings to which employees can go should be identified with the help of local civil defense officials.

Employees should be urged to provide for the protection of their families and themselves during non-working hours, using information provided by their local civil defense organization.

## **CONTINUITY OF MANAGEMENT**

Executives and managers of the textile, apparel, and related industries should provide for the continuity of management in a civil defense emergency.

Legally, a board of directors functions as a unit and not as individuals. Normally, the board's actions must be taken at a meeting attended by a specified number of its members. In some states, action can be taken without a meeting if a specified number of directors concur in writing. In some states, other informal methods are permitted. Board members must be present to vote at the meeting, except in one state that allows proxy voting. The usual rule is that a quorum must be present before a board can legally act. In most states the company's bylaws and regulations may be amended to waive or modify such restrictive requirements in an emergency.

In order that action can be taken in an emergency, company officials will need appropriate legal authority. Department heads and officers of the company should review all functions and determine which are vital to operations in an emergency. Then, the bylaws should be amended to provide legal authority for any necessary major changes in operations, as well as for the establishment of succession lists, and for reestablishing the company after it has been subjected to a major disaster.

Among the many types of emergency bylaws are those:

REDUCING QUORUM REQUIREMENTS.

AUTHORIZING THE BOARD OF DIRECTORS TO FILL VACANCIES WITH LESS THAN A QUORUM.

CREATING AND APPOINTING AN EMERGENCY MANAGEMENT COMMITTEE OF OFFICERS.

RELATING TO EMERGENCY DIRECTORS.

RELATING TO SUCCESSION TO THE CHIEF EXECUTIVE OFFICER.

PERMITTING THE ESTABLISHMENT OF AN ALTERNATE HEADQUARTERS.

## **Alternate Headquarters**

Good industrial defense planning by company management should provide for one or more alternate headquarters, at relatively safe locations, which would take over in the event the main headquarters is destroyed. To some extent, this dispersion will be influenced by the nearness of the present company headquarters to recognized major target areas.

The purpose of the alternate headquarters is to provide a place where executives, supported by the necessary personnel and equipment, can continue to direct corporate operations in times of disaster. It should be selected from the standpoint of security,





A.

B.

*A. Windows of West Point-Pepperell's Shawmut Mill have been bricked in to provide increased protection from radioactive fallout.*

*B. The inspection area at Cone Mills Corporation's Revolution Plant would serve as fallout shelter in case of an attack.*

*C. Movement to fallout shelter areas at West Point-Pepperell's Langdale Mill is facilitated by color coding.*

*D. A cafeteria in the Burlington Industries building illustrates dual-use concept of providing fallout shelter for employees and the public.*



C.



D.

accessibility, communications, and accommodations; and it should have available the information and records necessary for the continuity of operations.

These facilities should be designed and equipped so that in an emergency, senior management personnel, or their alternates, can carry on company business with a minimum of disruption. A study may show that company-owned facilities at another site could be used for the alternate headquarters. In making such a selection, protection against radioactive fallout should be a primary consideration.

A very important element in the choice of an alternate headquarters is the provision of *emergency communications* facilities. While remote locations may offer excellent possibilities in other respects, lack of communications in an emergency may weigh heavily against such a choice.

Company policies should be made known to all key personnel so that they will know under what conditions the alternate headquarters would become operative.

### Succession Lists

When disaster strikes, executives, managers, and other key personnel may be killed or injured. Consequently, company management provides for such contingencies by developing appropriate succession lists supplemented by job descriptions for the successors.

Executives chosen for the succession list should be listed in descending order, with the understanding that the surviving personnel highest on the list would assume temporary command of the activities of the firm.

In order to delineate responsibility in an emergency, a complete set of organization charts denoting lines of succession and responsibility should be prepared and kept available at the alternate sites. These charts should use lines of authority that are normally found in regular business procedures and which follow standard management functions. An orderly system of periodic review of these charts by top management should be established. These charts may be treated as "confidential" documents, if necessary.

In addition, a replacement plan for production personnel is necessary to facilitate the rebuilding of the operating force following a disaster. Such a plan should include the possibility of loaning personnel to, or borrowing from, other company plants.

Conservative defense planning would suggest that there be at least two replacements for each key



*This 6-meter amateur band radio at West Point-Pepperell's Lanett Bleachery and Dye Works is part of plant's emergency communications system.*

position. Each man should be capable of filling the following three positions:

THE POSITION HE FORMERLY HELD.

THE POSITION HE NOW OCCUPIES.

THE FUTURE POSITION HE IS SCHEDULED TO FILL IN THE LINE OF SUCCESSION.

After a disaster, a quick inventory should show which jobs must be filled from the outside. In this connection, consideration should be given to retired workers and other former employees of the company.

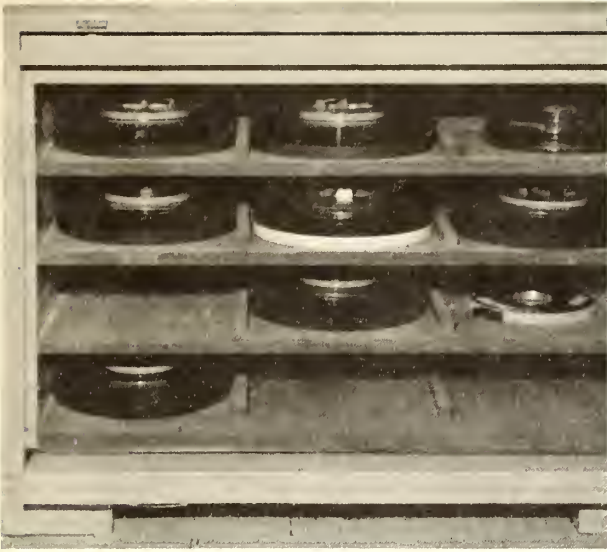
### PROTECTION OF VITAL RECORDS

Company management should provide a system to protect those documents that are necessary for the continuity of the company and its operations.

Even in peacetime, a company may be forced out of business due to loss of its vital records, because corporate records are, in effect, the corporate memory. Thus, when a company loses vital records (e.g., its fabric designs, patterns, formulas, financial records, etc.), it suffers "corporate amnesia" and cannot function properly.

Adequate protection involves storage of records in safe locations. Some companies have already provided their own safe, record-storage areas. Others





*Fireproof vital records storage cabinet in the computer area of Walter W. Moyer Company building.*

rent space in underground repositories. Still others put copies of their vital records at remote sites.

A sound records protection program requires planning, and the first step is to set up a procedure and assign responsibilities for that purpose. The following questions should be raised and resolved when establishing a records protection system:

WHAT RECORDS ARE ESSENTIAL?

IN WHAT FORM SHOULD THEY BE SAFEGUARDED?

WHERE SHOULD THEY BE LOCATED?

HOW LONG SHOULD THEY BE KEPT?

Before setting up a records protection program, the company records manager may want to review the special report entitled *Protection of Vital Records*, which was prepared for the Office of Civil Defense by the Association of Records Executives and Administrators, Inc. Copies of that report are available from local civil defense directors or from the Office of Civil Defense.

A records protection program is low-cost insurance against the partial or complete paralysis of the corporation. A procedure should be set up in each company to assure the continuous follow-up of records protection with regard to scope, selectivity, and currency. This may be accomplished by *automatic*

dispersion through the normal course of business, or by *planned* dispersion at selected intervals.

There are two basic types of documents that should be designated for protection:

Records that are needed for emergency operation or repair of the plant and related financial activities. (Such records should be stored at alternate corporate headquarters and emergency operating centers.)

Records that are essential to the preservation of company assets and of legal and contractual rights of stockholders and employees. (Such records may be stored at remote, safe depositories.)

Each company must make its own determinations as to what constitutes an essential record, but the listing should always include the certificate of incorporation, by-laws, minute books, and stock records. It should also include important financial records, contracts, patents, insurance policies, securities, research, engineering drawings, and basic operating data and specifications.

Careful consideration should be given to the form in which the vital records are stored. Original copies of some records may be required by State laws or to comply with other legal requirements. If storage space is a critical problem, records may be reduced to microfilm or computer tape. An analysis of the comparative costs of the various systems should take into account (1) storage space requirements and (2) equipment and supplies required to reproduce the records and put them into storable form.

The physical conditions of the storage area should be compatible with preservation of the copy materials to insure usefulness after long storage.

For storage locations, some firms have utilized bank vaults, abandoned mines, caves, and quarries remote from potential targets. Furthermore, a number of storage companies specialize in providing protection for business records.

A schedule for the delivery of records to storage should be established on a daily, weekly, monthly, or other regular basis.

A disposal schedule will help keep space requirements for records protection at a minimum. The importance of some records diminishes with time, and records that are vital today may have little or no value a year hence. Therefore, schedules should be established to discard specified records after fixed periods of time, or to reevaluate the need for the documents.

## MUTUAL-AID ASSOCIATIONS

Executives in the textile, apparel, and related industries should arrange for their companies to join with neighboring firms in organizing an industrial mutual-aid association.

An industrial mutual-aid association provides the means by which industrial plants, utilities, and business establishments in a community unite by reciprocal agreement to help each other in case of disaster. Such associations are particularly effective for textile and other industrial complexes located in suburban and rural areas, where local governmental protective services may be limited.

While many industrial facilities have excellent emergency procedures and organizations for disaster control, very few can provide all of the resources which they need to cope with the effects of enemy attack or major disaster. Equipment of even the best protected plants could be impaired or destroyed by such a disaster, and local government disaster services might be unavailable because of greater demands elsewhere. Pooling of self-protection resources of several facilities can provide a substantially expanded emergency capability for each.

By joining together and coordinating their efforts with local government, plants in an industrial area can pool their resources and know-how, even though the types of production vary widely.

Industrial mutual-aid has proved itself. Its importance in providing for the safety of people and the survival of essential production and distribution facilities has been repeatedly demonstrated in the aftermath of major disasters. The knowledge gained by these organizations through experience in combating the effects of peacetime disasters would be of vital importance in time of nuclear attack.

Mutual-aid associations enable companies to conduct their civil defense training and planning activities more economically. A rescue course taught at one facility can train the personnel of several companies simultaneously. Firefighting instruction can be given at another plant for the employees of several cooperating companies. Such an arrangement will reduce greatly the time, materials, and instructor personnel required for these programs, and it will minimize the cost-impact on each mill or plant.

Mutual-aid associations supplement rather than replace disaster control measures in each company. Self-help planning and the associated training of facility protection groups within each company are

the preconditions of an effective and successful mutual-aid association.

The legal aspects of industrial mutual aid are discussed in detail in a handbook *Industrial Mutual Aid Associations for Civil Defense* which may be obtained from local civil defense directors. Company civil defense planners should note that:

The legal liability that a firm may incur by cooperating in a mutual-aid group can be carefully and precisely defined in the agreement, which should form the foundation of the group.

Many States have civil defense statutes which provide special safeguards for civil defense personnel and personnel who function on behalf of mutual-aid associations set up in cooperation with civil defense organizations.

A successful industrial mutual-aid association requires the understanding and support of the top management of the participating firms. Casual endorsement is not enough. For a satisfactory organization to emerge and survive, management's endorsement should be based on a clear agreement with the following prior assumptions: in-plant preparedness, reciprocity, reliability, and financial support.

## ESTABLISHING THE PROGRAM

Executives and managers in the textile, apparel, and related industries should initiate the disaster control program for their respective companies by:

Issuing the necessary policy directives.

Designating a company civil defense coordinator to activate, implement, and coordinate the program.

Selecting an emergency committee composed of department heads and the directors of the various emergency services to advise and assist the coordinator on industrial defense matters.

### Documentary Motion Picture

Company management may find helpful the documentary motion picture *Memorandum to Industry*, which depicts how typical industrial firms have prepared themselves to cope with a civil defense emergency. Local civil defense directors will be able to assist plant managers in obtaining the film from U. S. Army Audio-Visual Support Centers. (Request *Memorandum to Industry*, DOD-CD 20-243.) This is a 16 mm color film. Running time is 31 minutes.





*West Point-Pepperell personnel discuss industrial civil defense requirements with the county civil defense director.*



*Officials of Munsingwear, Inc., review company civil defense plans with a representative of the Minneapolis-Hennepin County civil defense office.*

### **Emergency Coordinator and Emergency Committee**

The company or plant civil defense coordinator and his advisory committee are discussed jointly because many of their duties are interchangeable. Furthermore, most, if not all of the committee members probably would serve on the coordinator's staff in the event of a major disaster or national emergency. Therefore, any division of duties between the coordinator and the committee should be made by each company on the basis of its own requirements.

The coordinator should be a capable executive who gets results and has the respect and cooperation of his associates and employees. Some companies appoint the Plant Manager as the civil defense coordinator; others select one of their junior executives.

The coordinator, in collaboration with advisory committee, should:

- ESTABLISH LIAISON WITH THE LOCAL GOVERNMENT.
- PREPARE, COORDINATE AND TEST THE EMERGENCY PLAN.
- INCLUDE EMERGENCY FINANCIAL PROCEDURES IN THE PLAN.
- DESIGNATE POST-DISASTER ASSEMBLY POINTS IN THE PLAN.
- PUBLICIZE THE PLAN.
- PUBLISH THE PLAN IN AN EMERGENCY MANUAL.
- ASSIGN EMERGENCY DUTIES TO DEPARTMENT HEADS AND DIRECTORS OF EMERGENCY SERVICES.
- IMPLEMENT THE FORTY POINT CHECKLIST (FIGURE 7, NEXT PAGE).

## Liaison with Local Government

Most day-to-day civil defense activity is conducted at the local government level. Therefore, the local civil defense director should be the first government contact on civil defense problems that arise in developing the company's survival plan.

The company should also provide support and assistance to the local government's program for saving lives and minimizing damage to property in case of a civil defense emergency or other disaster. In smaller communities, protective agencies may lack manpower and equipment and should, therefore, be supplemented by the voluntary assistance of local business and industry.

Figure 7.

## EMERGENCY PREPAREDNESS PLAN

The company's emergency preparedness plan should be designed to:

Minimize the loss of life and property resulting from natural disasters, industrial accidents, and enemy action, including a nuclear attack.

Provide for the continuity of each essential company function.

Accelerate post-disaster recovery.

The company's emergency plan should mesh with the local community shelter plan, if a CSP has been developed for the community in which the company's facilities are located.

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## Checklist for Company Civil Defense Coordinators

1. Get in touch with your local civil defense director.
  2. Appoint corporate and plant civil defense coordinators.
  3. Select corporate and plant civil defense advisory committees.
  4. Issue corporate policy directives establishing the civil defense program.
  5. Train civil defense coordinators and committees at OCD schools.
  6. Assess vulnerability of plant and corporate headquarters locations.
  7. Arrange for receipt and dissemination of warning.
  8. Establish a control center and communications system.
  9. Develop emergency shutdown procedures.
  10. Provide fallout shelter for employees and the public.
  11. Plan for mass movement of employees to shelter.
  12. Enlarge existing protective groups.
  13. Organize employees into special groups for self-help.
  14. Enroll these groups into departments of local government as auxiliaries.
  15. Train for shelter management, radiological monitoring, first aid and medical self-help, decontamination, rescue and firefighting.
  16. Join with neighboring plants in organizing industrial mutual aid associations.
  17. Establish a security system for protection against espionage and sabotage.
  18. Prepare to detect and report unexploded ordnance and unconventional weapons.
  19. Establish executive succession list to ensure continuity of management.
  20. Amend corporate by-laws and regulations as necessary.
  21. Establish emergency corporate headquarters at alternate locations.
  22. Protect vital company records and documents.
  23. Plan for continuity of each important company function.
  24. Assign emergency duties to department heads and appropriate employees.
  25. Develop emergency financial procedures.
  26. Designate post attack assembly points for employees.
  27. Prepare to assess and report damage following attack.
  28. Plan for emergency repair and restoration.
  29. Develop plans for quickly training employees following attack.
  30. Deconcentrate production of critical items.
  31. Disperse new industrial plants.
  32. Prepare a manual of company and plant civil defense plans.
  33. Tell employees about the company civil defense plan.
  34. Test the disaster control plan with drills and exercises.
  35. Inform and educate employees in methods of personal and home survival.
  36. Publish stories about civil defense in company and employee publications.
  37. Urge discussion of civil defense at employee meetings.
  38. Tell stockholders about your company civil defense plan.
  39. Let the public know that your company has prepared for civil defense.
  40. Provide support and assistance to local government in preparing for community survival.
-





*Greensboro-Guilford County civil defense representative discusses fallout shelter supplies with a company official at the Burlington Industries Executive Office Building.*



*Company and county civil defense personnel check emergency supplies at West Point-Pepperell's Shawmut Mill.*

In developing the company plan, each department head should examine the functions for which he is responsible in peacetime, and work out solutions to the problem of assuring continuity during and following a major disaster or attack. Unquestionably, some peacetime functions would become unnecessary in wartime, while others would take on additional importance.

The company plan should include a definition of the *increased readiness* measures and related operating procedures that will be taken during periods of increased international tension. These procedures should specify who does what, where and when to improve the company's civil defense readiness during any period when the local government is taking increased readiness measures. The emergency coordinator should consult with the local civil defense director to ensure that the increased readiness plans of his facility are consistent with those developed by the local government in accordance with Part G, Chapter 5 of the *Federal Civil Defense Guide*. Typical increased readiness actions to be taken by the company are indicated in subsequent sections of this handbook.

Procedures for use of company funds in an emergency should be developed in advance. Banking arrangements and corporate by-laws should have ample provisions for withdrawal of funds. A list of depositories in which the company maintains its funds should be kept current and on file in the company's protected records.

The company plan should be tested periodically in exercises, during which management personnel report to the company control center (or alternate headquarters) to practice operating under simulated emergency conditions.

Whenever practicable, a company's emergency preparedness plan should provide for postdisaster assembly points. Depending on such factors as location, size, equipment, and personnel available; those centers may function in several capacities ranging from mere assembly points to temporary operating sites.

The assembly points could serve also as manpower inventory locations or personnel registration points. Registration probably would involve the preparation of a record on each reporting employee showing:

NAME, ADDRESS AND TELEPHONE NUMBER.

DEPARTMENT IN WHICH HE WORKED.

SPECIAL SKILLS HE POSSESSES.

INJURIES, IF ANY, SUSTAINED BY THE EMPLOYEE OR HIS FAMILY.

FINANCIAL ASSISTANCE THE EMPLOYEE MAY NEED.  
ADEQUACY OF HIS LIVING QUARTERS.

EMERGENCY REPAIRS REQUIRED TO MAKE HIS  
HOME HABITABLE, IF DAMAGED.

OTHER INFORMATION PERTAINING TO HIS ABILITY  
TO TAKE AN EMERGENCY JOB ASSIGNMENT.

Some companies give each employee an identification card which lists the addresses and telephone numbers of the reporting centers.

## Publicizing the Emergency Plan

The following media should be used in publicizing the company's emergency plan to employees, stockholders, and the public:

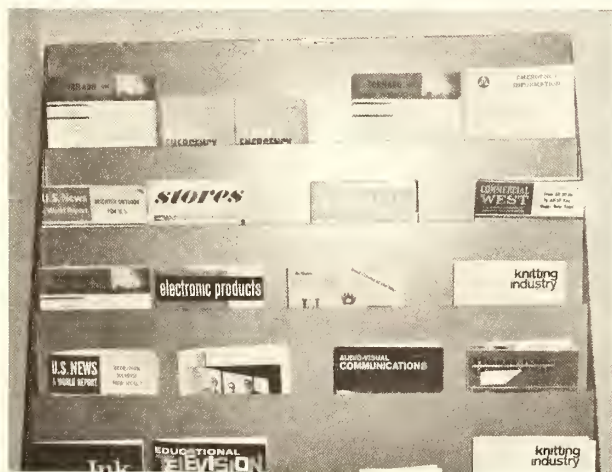
COMMUNITY RADIO AND TELEVISION PROGRAMS  
AND NEWSPAPER ADVERTISEMENTS.

PUBLICATIONS, MOTION PICTURES, AND POSTERS  
(AVAILABLE FREE OF CHARGE FROM THE LOCAL  
CIVIL DEFENSE DIRECTOR AND THE FEDERAL OFFICE  
OF CIVIL DEFENSE).

COMPANY PUBLIC ADDRESS SYSTEMS, NEWSLETTERS,  
MAGAZINES, BULLETINS, AND POSTERS.

EMPLOYEE PUBLICATIONS AND MEETINGS.

Industrial and business employers occupy a position of prestige and influence in their communities. If it is known that they are making survival plans, their employees and other citizens are likely to do likewise in their homes and communities. Publicity about the company's emergency plan should be coordinated with the appropriate local civil defense agency to ensure compatibility with Community Shelter Plans.



## Increased Readiness Action — Emergency Coordinator

During periods of increased international tension, maintain liaison with local civil defense director; brief plant manager on the local government's increased readiness actions; review company plans and personnel assignments for emergency operating functions.

## Disaster Control Manual

The company's disaster control manual should contain the basic elements of the emergency plan so that in the event of the coordinator's absence, others will know what decisions, task assignments, and other arrangements have been made for implementing the plan.

The format of the manual is, of course, optional with each company. Some companies may find it advantageous to follow, in general, the organization used in this handbook.

## DISASTER CONTROL ORGANIZATION

Each plant or mill should establish an organization that will provide for the protection of life and property in all types of emergencies. The organization should consist of employees who are designated by the plant management to perform specific emergency functions and to make related pre-emergency preparations under the direction of the company emergency coordinator. The emergency services listed below pertain primarily to the larger textile and apparel companies. Smaller companies probably would combine two or more of the services into one unit or assign the functions of each to a single employee.

Training	Emergency Communications
Engineering	Shelter Management
Security	Medical and Health
Firefighting	Radiological Monitors
Rescue	Wardens
Transportation	Welfare

In setting up the disaster control organization, the emergency coordinator's efforts should aim at the designation of at least one employee for each of the functions indicated above.

*Civil defense and emergency preparedness publications are part of the employee information program at Munsingwear, Inc.*



The emergency services are concerned with several activities in which close coordination with the local civil defense director is necessary, because they are area-wide in scope and therefore must be consistent with, and an integral part of, the local government's emergency operations plan. These include warning, shelter-use planning, movement to shelter, radiological monitoring, decontamination, mutual aid, and communications, including release of emergency information to the public.

## TRAINING SERVICES

In the event of nuclear attack on this country, the survival of the textile industry will depend to a large extent on its ability to protect its employees and mills, preserve its corporate structure, and take adequate measures for the prompt resumption of production. Almost every company has employees with abilities that would fit into a disaster-control plan. Management, therefore, should arrange for a company-wide survey of employees' skills, experience, and training that might fit into the broader civil defense program. From this survey, employees can be organized into special groups to utilize their various skills to the maximum.

Most large mills have trained fire brigades, guard services, rescue groups, and first-aid teams, which are already organized for natural and occupational disasters. Some of the smaller mills may also have organized such groups, albeit on a smaller scale. Protection for employees and mills in case of a nuclear attack means strengthening and expanding such protective groups by the addition of teams trained in shelter management, radiological defense, and special communications. It is important that every employee receive some civil defense training so that he will know how to protect himself and help others in case of an emergency. The training received at a mill can also be used by the employees to provide protection for their families during an emergency.

If practicable, company management should organize a training service composed of a director to coordinate all training activities and at least one instructor for each of the emergency services. This service may conduct the training courses itself or arrange for others to do so. In the latter case, it should monitor the training.

Training is available through local civil defense organizations, as well as through the Federal Office of Civil Defense. For example, a course in *Industrial*



*Company radiological monitors are trained at West Point-Pepperell's Laugdale Mill.*



*The Celanese Corporation conducts fire protection training for plant employees. (Courtesy of "Celanese World")*

## Increased Readiness Action — Training

During periods of increased international tension, cooperate with local civil defense officials in arranging for accelerated training in civil defense skills (e.g. radiological monitoring or shelter management) for industrial personnel. Check availability of trained personnel for service in company facilities designated as public fallout shelters or other public shelters in the vicinity.

*Civil Defense Management* sponsored by the Office of Civil Defense is open to all business and industrial executives who have the responsibility for civil defense planning in their companies. There is no tuition or registration charge for this course, which is given periodically at the OCD Staff College in Battle Creek, Michigan. Your local civil defense director can provide additional information and enrollment forms. He can also provide information about a number of specialized courses in industrial defense, emergency planning, and facility protection, which are offered periodically by the Department of Defense, the military services, and other organizations. Such courses include:

*National Security Seminars* conducted in selected cities throughout the country by the Industrial College of the Armed Forces.

The course in *Industrial Defense and Disaster Planning for Privately-Owned and Privately-Operated Facilities* offered several times annually by the U. S. Army Military Police School at Fort Gordon, Georgia.

*Industrial CD Seminars* conducted by State and local governments, State Universities, national trade associations, and professional organizations in cooperation with the Office of Civil Defense.

A 12-hour course in *Personal and Family Survival* is sponsored by the Department of Education in most states. Many companies have arranged, through their local civil defense organizations, to have this course given to their employees. Employees are often encouraged to enroll other members of their families.

*Medical Self-Help* training is also available through the public health offices in most states. The course was developed by the U. S. Public Health Service and the Office of Civil Defense in cooperation with the American Medical Association.

Training in *Radiological Monitoring and Shelter Management* can also be obtained at no cost for com-

pany employees under a variety of arrangements. Company requirements for such training should be discussed with the local civil defense director.

## ENGINEERING SERVICES

The engineering service, in cooperation with the other emergency services, should develop and maintain emergency facilities; establish and test shutdown procedures; prepare damage assessment reports; and perform postdisaster repairs and restoration.

The engineering service may be called upon to design, construct, equip, and maintain such emergency facilities as:

- FALLOUT SHELTERS AT THE PLANT SITE.
- THE PLANT WARNING SYSTEM.
- THE COMPANY CONTROL CENTER.
- THE EMERGENCY COMMUNICATIONS SYSTEM.

These facilities may have special emergency requirements for water, light, heat, and ventilation. Some may require emergency generators to assure availability of electric power. In addition, group fallout shelters should have:

Ten (10) square feet of shelter floor area per person.

At least 65 cubic feet of space per person.

At least 3 cubic feet of fresh air per minute per person.

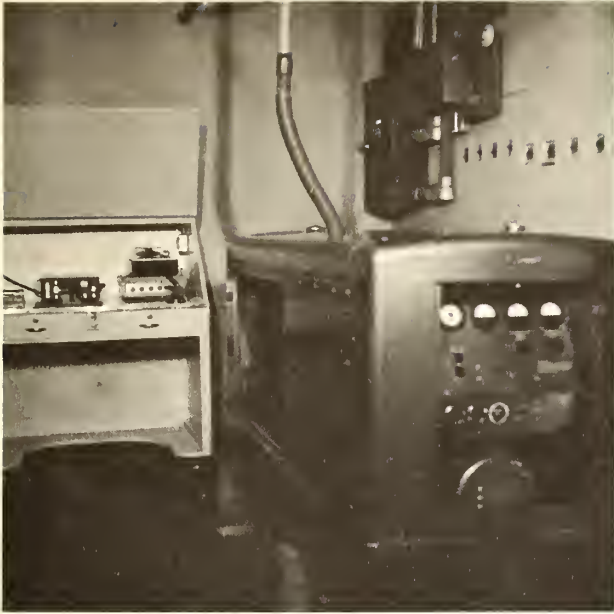
A protection factor of 40 or better (i.e. occupants would receive only 1/40th or less of the outside radiation intensity).

The engineering service should also collaborate with the medical staff on sanitation engineering (e.g. the inspection and proper control of toilet facilities, garbage and trash disposal, hygienic procedures, etc.) for all emergency facilities.

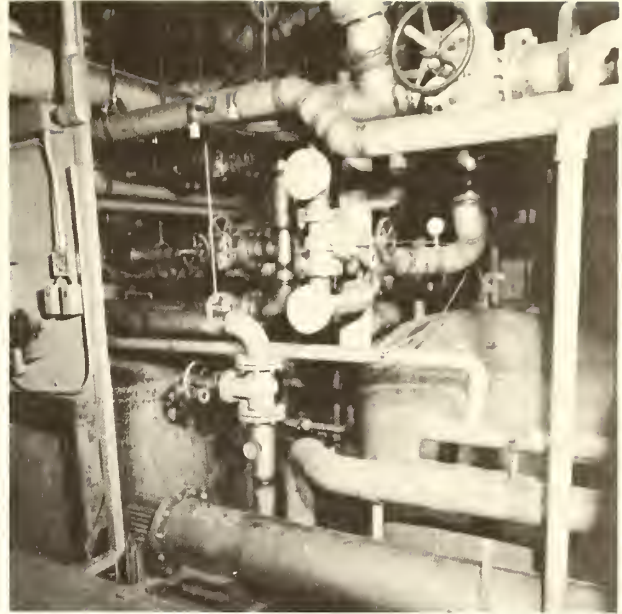
## Shutdown Procedures

Orderly and controlled shutdown procedures are vital for the protection of company property and the lives of employees in case of nuclear attack or other emergency. Because of the diversity in the textile industry, shutdown procedures vary from merely pulling a switch in a sewing plant to involved procedures in chemical processing plants engaged in the manufacture of manmade fibers. It is suggested that those plants involved in chemical processing refer to the handbook entitled *Preparedness in the Chemical and Allied Industries* for guidance involving chemical shutdown





*This emergency generator (25 KW) can provide power for ventilation, lights, and communications at West Point-Pepperell's Shawmut Mill.*



*Water supply for the fabric softening process at Munsingwear, Inc., would provide drinking water for fallout shelter occupants in a civil defense emergency.*

procedures. The engineering service should study all operations carefully to determine if any special precautions are necessary to protect equipment during shutdown and preserve it over an extended period of non-use.

Each company's disaster planning should consider all utilities such as water, gas, steam, power, ventilation or refrigeration devices and other similar controls or equipment, which must be given attention during an attack or a natural disaster. Emergency shutdown procedures should be outlined for each department, and the persons to be responsible for each area designated. One person in the engineering service should be made responsible for seeing that each department is trained to perform the prescribed shutdown procedures.

Drawings showing the location of key valves, switches, and feed lines in operating areas should be stored where they will be accessible during an emergency.

Provision should be made for emergency lighting and power for all contingencies that may arise during a disaster. If it is necessary for shutdown crews to remain at work after other employees have reported to their assigned shelters, special protected space

should be provided for them, since they may not have time to reach shelter before fallout arrives.

Consideration should be given to maintaining an adequate water supply after shutdown. A survey of all water-collecting units should be made (e.g., sprinkler lines, processing water tanks, tubs and kiers in wet processing operations, and water being used for humidifying purposes). In many cases, such water may be used for firefighting, decontamination procedures, and general sanitation, even if it is not fit for drinking. The use of water from nearby rivers, lakes, or wells also should be considered.

A secondary source of drinking water is available in Federally furnished water drums in public fallout shelters.

#### **Increased Readiness Action — Shutdown**

**Conduct shutdown drills and/or employee release drills for the plant or mill supervisors and those employees with related emergency assignments.**

## Damage Assessment Reports

As soon as outside radiation levels permit (based on information provided by the company's radiological monitors or the local government's Emergency Operating Center) the emergency coordinator should begin compiling data showing:

NUMBER OF SURVIVING PERSONNEL BY SKILL CLASSIFICATION.

PHYSICAL DAMAGE TO THE PLANT.

The latter report is the primary responsibility of the engineering service, and it should contain:

A description of the physical damage suffered by the facility.

An estimate of the repairs and/or restoration required.

The time-frame involved for the resumption of production.

The percent of production that could be expected in relation to specific products.

A definition of radiological hazards, if any.

Other information pertinent to a clear evaluation of the postattack situation (e.g., an identification and evaluation of surviving resources and capabilities).

These damage assessment reports should be distributed in accordance with instructions from the company control center. As a general rule, these reports should be prepared as often as required and transmitted simultaneously to: COMPANY HEADQUARTERS OR ALTERNATE HEADQUARTERS, and the LOCAL GOVERNMENT'S EMERGENCY OPERATING CENTER (EOC).

The local government may be expected to include their information with other data received from all sources and forward it to the State government which, in turn, may relay it to the Federal Government, where it might be used for decision-making on resource management.

## Postdisaster Repairs and Restoration

The priority for accomplishing postdisaster repairs and restoration at each company probably would be governed by the:

ESSENTIAL NEEDS OF THE NATION AND COMMUNITY.  
SKILLS, MATERIALS, AND EQUIPMENT AVAILABLE.  
INDIVIDUAL AND COMMUNITY INITIATIVE.

Thus, the combination of needs, availability, and leadership would play an essential role during the postattack period. It is conceivable that in some textile and apparel mills, the limited availability of skills, materials, and equipment could restrict production to

only one kind, one color, one weight, and one weave of cloth.

In a natural disaster, repair crews are usually available from outside sources. In the event of an attack, however, outside assistance may not be available, and each mill would have to rely on its own ability to make emergency repairs in order to resume operations. Most of this ability would be provided by the engineering service.

The company could begin to make repairs and start restoration as soon as it was safe to assemble workers who have been trained in:

RADIOLOGICAL MONITORING.

DEMOLITION OF UNSAFE, DAMAGED STRUCTURES.

OPERATION OF HEAVY, EARTH-MOVING VEHICLES.

ENGINEERING AND MAINTENANCE DUTIES.

Radiological monitoring capability is an essential element of company preparedness. After fallout arrives, intelligent decisions about where it is safe to go and how much time can be spent in an area depend on the detection and measurement of the radiation.

Demolition crews should include riggers, burners, electricians, equipment operators, and millwrights due to the diversity of the problems that would be encountered.

The operation of heavy earth-moving vehicles would be important if debris removal were required in getting a manufacturing area back into production. Therefore, a knowledge of the types, numbers, and locations of such vehicles would assist materially in mill rehabilitation.

An engineering and maintenance capability would be vital because every mill makes extensive use of utilities (e.g., electric power, gas, heat, water, and communications), and production depends on a smooth interaction of many working parts. Therefore, preparations should be made to use:

ALTERNATE PRODUCTION METHODS.

SUBSTITUTE PRODUCTION MACHINERY.

STANDBY POWER AND COMMUNICATIONS EQUIPMENT.

## SECURITY SERVICES

The security service should take the necessary measures to (1) protect plant personnel; prevent unauthorized access to equipment, facilities, material, and documents; and to guard against espionage and sabotage; and (2) detect and report unexploded ordnance or unconventional weapons discovered on or near the premises.



## Espionage and Sabotage

Espionage is spying—that is secretly, or under false pretenses, searching out information or making observations with the intention of relaying such information or observations to another country. Espionage agents collect information that contributes to an evaluation of a nation's war potential. Even during times of peace, espionage agents seek military, economic, scientific, and technical information so as to keep foreign powers informed of developments in those fields. Espionage is of direct interest to industrial management, because it is generally a prerequisite to sabotage.

A war emergency might be preceded or accompanied by acts of sabotage against industrial plants in an attempt to cripple production and spread confusion and terror among the people. Sabotage by fire is a favored method for interrupting the production processes. Explosives and the introduction of foreign matter into production equipment are also ever-present dangers.

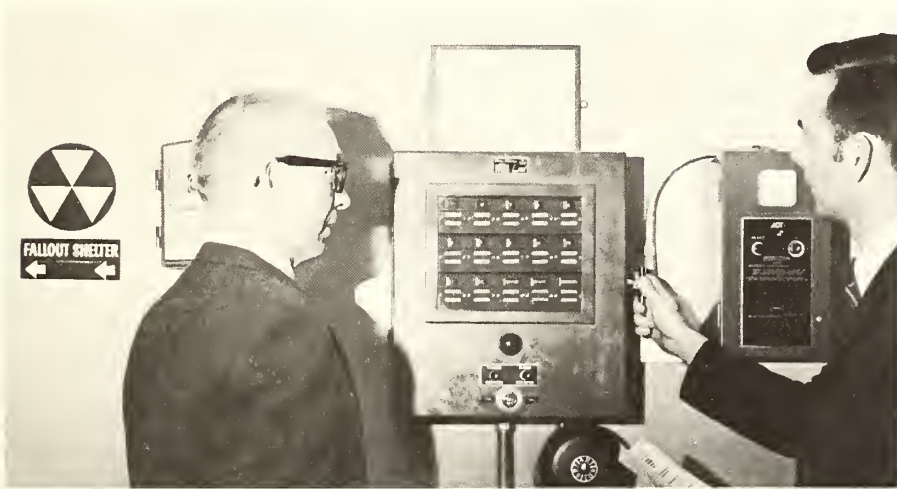
Heavy machinery, tanks, pipes, furnaces, and other equipment can be disabled or ruined through the introduction of abrasives, acids, or other substances. Materials transported in tank cars or trucks (e.g., caustics, acids, bleaches, flotation agents, fuel oil, and gasoline) are susceptible to similar sabotage during transportation.

The use of chemicals or other agents to contaminate air-circulating systems or drinking water sources can endanger the lives and health of employees.

The power supply for many mills may be a particularly inviting target for the saboteur, whose mission is to maximize the delay in production through the destruction of a vital and necessary part of the plant. Unprotected power transformers, diesel engines, and steam boilers could be inviting targets for sabotage.

Plant managers should assess the vulnerability of their facilities and processes to sabotage, and develop protective measures against them. Any damage to buildings or equipment by fire or other means should be quickly and thoroughly investigated.

Investigation of espionage and sabotage is primarily the responsibility of the Federal Bureau of Investigation. Espionage consists of the illegal obtaining or disclosing of information relating to the national defense of the United States either for the benefit of a foreign power or to the detriment of this country. The sabotage statutes cover generally the willful destruction or attempted destruction of national-defense materials, premises or utilities, or the willful making of any such material in a defective manner. Any information received indicating the possibility of espionage or sabotage should immediately be reported to the nearest office of the Federal Bureau of Investigation.



*Electronic warning system detects fire or smoke and indicates intrusion at Burlington Industries building.*



*The plant security organization controls entry at Munsingwear, Inc.*



*Perimeter barriers are part of the plant security program at the Arrow Company, a division of Cluett, Peabody & Co., Inc.*

## **Unexploded Ordnance and Unconventional Weapons**

When unexploded ordnance and unconventional weapons, that have been clandestinely introduced are discovered on or near the plant premises, they should be reported promptly through the following organizations:

Plant Security Service.

Appropriate State and local authorities.

Office of Civil Defense Regional Director.

Department of Defense Explosive Ordnance Disposal Unit or the Zone of Interior Army Commander.

The Federal Bureau of Investigation, if nuclear weapons are involved.

The State or local government will provide for restriction of areas and protection of persons from such ordnance, including execution of plans for evacuation to safer areas, until arrival of responsible ordnance personnel.

## **Physical Security**

The company disaster control plan should specify physical security measures to be taken during an emergency. Security planning includes protection of critical areas, control of access, reporting of incidents, and employee training in security measures. Company civil defense planners will find security measures guidance in the Department of the Army Field Manual *Physical Security*, FM 19-30 (available from Superintendent of Documents, Government Printing Office, Washington, D. C. 20402).

## **Protection of Physical Assets**

At most textile mills, there are three lines of defense at which it is desirable to have protection against intrusion by unfriendly persons:

*At the property line*, where the minimum protection should be the posting of "NO TRESPASSING" signs, and reasonable enforcement against their violation.

*At a perimeter encircling the immediate environment of mill buildings and auxiliary structures*, including cargo-truck staging-areas, etc. Control of ingress and egress should be practiced at all times at this perimeter by fences, natural barriers, watchmen, receptionists, or other means.

*At internal areas of special security importance*. Any variation from positive control of ingress



and egress at the perimeter should be compensated for by internal control of access to those internal rooms and areas where:

- (a) A confidential process may be observed;
- (b) Equipment is vulnerable to sabotage, such as power transformers, standby generators, acid tanks; and
- (c) Company confidential information or government classified information is handled.

Thus, optimum protection at a textile mill or factory is obtained by the most feasible combination of ingress and egress controls at the real property line, at the mill environs perimeter, or at special internal, vulnerable areas. The optimum combination at one plant location might favor strong perimeter control; at another facility, optimum protection might favor area control with only casual perimeter surveillance.

### Auxiliary Guards

Many textile mills would find it too expensive to put watchmen at each plant entrance to provide 100% check on personnel and cargo vehicles moving in and out of the mill-yard. Managers of textile manufacturing facilities rely less on watchmen and security personnel and more on measures of isolation (i.e., fencing, warning devices, lighting, etc.). Closed-circuit television is sometimes used to maintain surveillance.

At times of increased international tension or during other emergencies, there may be attempts at unauthorized entry to commit pilferage, sabotage, or espionage. Therefore, auxiliary watchmen should be designated, trained and made available to serve during an emergency. These auxiliary guards should be selected from among employees having substantial competence and familiarity with the plant but with due care that the ones selected may not be more urgently needed for other functions during an emergency.

The duties of this *auxiliary* guard group, during times of emergency, would be to assist the *regular* plant security guards and civil police in the following types of actions:

- Protecting life and property in and about the plant;
- Preventing the entry of unauthorized persons and the unauthorized bringing in and taking out of materials and equipment;
- Issuing special keys and identification materials;
- Detecting and reporting any unusual activities or incidents on or near plant property;
- Reporting violations of law and plant rules and regulations;

Reporting and detecting fires, spillage, and leakage;

Inspecting, maintaining, and controlling fire protection equipment and systems;

Operating an ambulance service, as needed, both on and off the plant site;

Providing other emergency transportation as authorized;

Controlling and directing plant traffic, and the use of employees' parking lots;

Maintaining a "lost and found" service for company and employees' property; and

Assisting with a "missing persons" service if required.

After the initial impact of a disaster, auxiliary guards may return to their normal duties, if they are not needed for physical security, perimeter protection, and control of entry after the disaster.

The disaster plan should provide that a responsible management representative who reports directly to the plant manager, take charge of the auxiliary guard personnel both during and immediately subsequent to the disaster. Until the investigation of the disaster is completed, he should also conduct all liaison with the various police authorities.

### Liaison with Civil Police

It is essential that each mill manager know what governmental police authority should be called upon in a particular kind of emergency. Such considerations would include:

The legal authority and responsibilities of the city, county, and State police.

The police authority best equipped to cope with the particular emergency.

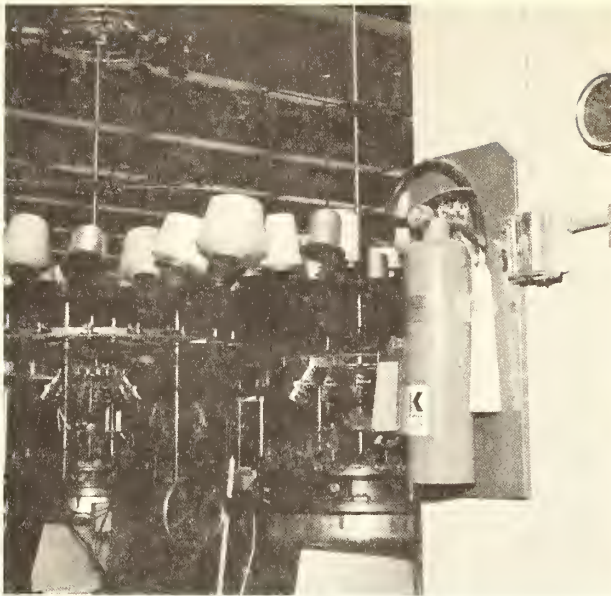
The police station closest to the plant.

The authority's willingness to participate in joint planning and drills.

The governmental police authorities should be consulted regarding emergency plans for control of traffic adjacent to the plant; perimeter control to prevent unauthorized people from entering the premises; and summary investigations and arrests if there should be vandalism, looting, sabotage, trespassing, or theft.

#### Increased Readiness Action — Security

Review personnel assignments and check availability of auxiliary guards; issue and inspect necessary equipment; assemble designated employees for briefing and/or refresher training as appropriate.



*Fire protection program at Walter W. Moyer Company includes availability of appropriate equipment at vulnerable locations.*



*The safety director inspects a dry chemical fire extinguisher at Monsanto Company.*

## **FIREFIGHTING SERVICES**

Most textile mills already have a firefighting organization. However, some of the smaller mills may depend heavily on city or community fire departments for this service. Shops located in leased quarters—such as loft buildings—generally rely on the building management and local government firefighting capability.

Under conditions of nuclear attack, it is unlikely that community services would be available for industrial use. This emphasizes the need for adequate fire-protection organizations and fire equipment in the mills and shops. Since a nuclear attack could cause a multitude of small fires simultaneously which, if not extinguished at once, could cause a catastrophe, trained crews are essential for successful firefighting operation under emergency conditions. The regular plant fire department should be supplemented by trained auxiliary firemen, i.e., employees who have been trained for this function.

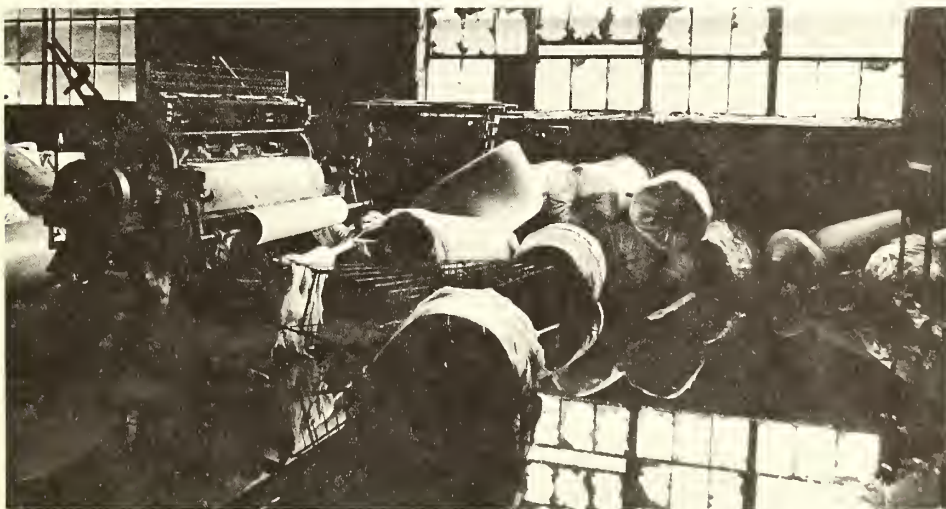
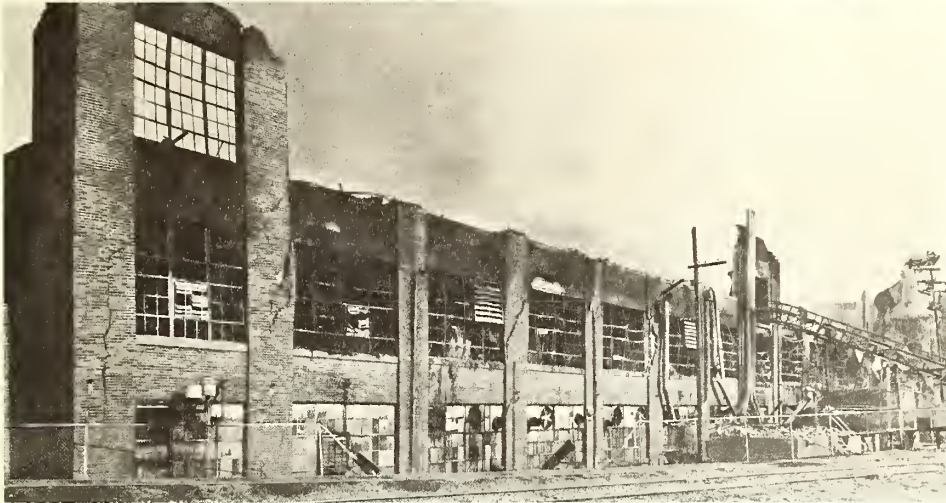
No one knows what size bombs or detonation altitudes an enemy might elect to use in an attack, but it is certain that an extremely serious fire problem would develop in areas out to several miles from the point at which a nuclear weapon is exploded. Unchecked, these fires consume all combustible materials from the ground zero point to natural or manmade

firebreaks. After a surface blast of a 20-megaton weapon on a clear day, numerous fires would quickly develop at various locations out to about 12 miles from ground zero. The thermal energy received at 12 miles from ground zero would cause third-degree burns to exposed persons; ignite exposed wood, rubbish, paper, upholstery, curtains, leaves, and brush; and certainly the majority of products found in and around a textile operation (see figure 1).

If a 20-megaton weapon is detonated at the surface, there would also be a serious radioactive fallout problem for a few miles upwind and crosswind from ground zero, and several hundred miles or more downwind from ground zero. The exposure of firefighting personnel in an area of radioactive fallout should be limited and controlled. On the downwind sector from ground zero, fire fighting would be seriously hampered for a considerable length of time because of the presence of harmful gamma radiation. The determination of the practicality of operating in contaminated areas would be based upon radiological monitoring reports and the priority of the work involved.

Following a nuclear attack, secondary fires can be expected from blast-disrupted gas lines, heating plants, and electrical systems. Consequently, potential fire hazards should be minimized near and inside of fallout shelters wherever possible.





*Aftermath of a disastrous fire in textile industrial complex at Rossville, Georgia (1967). (Photographs courtesy of Tom Franklin, Chattanooga Times.)*

Peacetime fires can have devastating effects. On June 10 and 11, 1967, a fire of undetermined origin swept through about half of the five-block textile industrial complex that is the economic heart of Rossville, Georgia. The fire raged for more than 25 hours, leaving an estimated \$20 million in damages and at least 1,500 persons out of work. A total of 15 different industrial companies operated in the complex, which contained 1¼ million square feet of floor space. Hundreds of firemen and volunteers from nine communities joined in the 25-hour battle through a hell of acrid smoke, flame, twisting metal, and caving roofs (see photographs on preceding page). To minimize losses due to fires, the firefighting service should:

Arrange for the fire protection training of most, if not all, of the company's employees.

Ensure that all employees know:

- a. The location of the nearest public fire-alarm box and how to operate it;
- b. How the company wants a fire in the building reported; and
- c. How to use the fire extinguishers and other firefighting equipment provided at the workplace.

Inspect the premises regularly to identify and eliminate fire hazards.

See to it that all flammable rubbish and discarded articles that would burn easily are routinely removed from the premises (includes empty cartons; boxes; useless papers or documents; soiled or oily rags; paint-soaked brushes, etc.).

Make sure flammable fluids, such as gasoline, benzene, naphtha, etc., are stored only in tightly closed and locked metal containers outside the building. (If such items are not stored outside, obtain advice of local fire department regarding appropriate protection.)

Make and post a list of all the firefighting equipment and its location in the establishment.

See that the firefighting equipment is available and in good working condition.

### **Increased Readiness Action — Fire Protection**

**Review and update fire protection plans in consultation with local government fire officials; check operability of fire equipment and availability of water for fire control; review plans for augmenting the company firefighting service (to reduce dependence on outside help that might not be available in the event of attack.)**

## **RESCUE SERVICES**

Most large firms have employees trained and ready to remove trapped victims of peacetime disasters. However, many small firms—such as those often found in the apparel industry—have no such capability. Even the smallest firm should designate one or more persons who will be responsible for rescue operations in case of a disaster.

About 50 percent of a nuclear weapon's total energy goes into the blast wave, which travels rapidly away from the impact point, behaving like a moving wall of compressed air. This shock wave—traveling somewhat faster than the speed of sound—is followed a few seconds later by a negative pressure phase. The effect is first to squeeze and then expand or explode structures. Along with these great extremes in pressure, there would be short wind gusts of enormous velocity—up to several hundred miles per hour near ground zero. The tremendous shock wave and the force of these winds would inflict great damage to buildings and could leave people in various stages of entrapment miles from the impact area.

Rescue operations should be coordinated with other civil defense activities, such as radiological monitoring and medical aid. The persons selected for rescue operations should be trained in first aid and informed about the hazards of radiation.

### **Increased Readiness Action — Rescue**

**Review personnel assignments and check availability of designated personnel; inspect rescue equipment; cooperate with local civil defense organization in accelerated rescue training for industrial personnel.**

## **TRANSPORTATION SERVICES**

Trucks and other vehicles play a vital role in the operations of most industrial companies. In the event of a major disaster, these vehicles probably would be needed to transport men and supplies or equipment between company facilities and those of the local government or other plants in the industrial mutual-aid association. The vehicles could also be used during an emergency as ambulances and for radiological monitoring or emergency repairs to utilities and facilities.



### Increased Readiness Action — Transportation

Check operability of emergency vehicles; fill fuel tanks. Put emergency vehicles in garage or under cover (to minimize damage from thermal flash); close windows and/or cover with pliofilm (to prevent radiological contamination of interiors).

Before an emergency, the company trucks could be used to assist the local government by moving fallout shelter supplies (e.g. water, food, medical-care kits, sanitation kits, and radiation-detection instruments) from warehouses to the company shelter area.

### EMERGENCY COMMUNICATIONS SERVICES

The emergency communications service should cooperate with the engineering service in establishing a company control center; provide for the receipt and dissemination of warning signals and announcements;

and give communications support to management and the emergency coordinator and his staff during an emergency.

The actual construction of the company control center should be the responsibility of the engineering service, but the planning should be a joint project with the emergency communications service.

The control center should have protection against fire and radioactive fallout. It can be located either inside of the main shelter area or in a more isolated location. It should be equipped with the necessary facilities to give plant management communications support under emergency conditions. Some companies have located their control centers underground to make them less vulnerable to blast damage. If practicable, the center should be large enough to accommodate:

Communicators.

Plant manager and other executives with emergency duties.

Emergency coordinator and selected members of his staff (e.g. radiological monitors).



*Members of West Point-Pepperell's Valley Rescue Unit are trained and equipped to respond to either natural or man-made disasters.*

The control center should be equipped for the receipt and dissemination of warning signals and other emergency information. As a minimum, the center should be able to receive the public warning signals and to tune an AM radio receiver to the local commercial radio station for announcements issued through the Emergency Broadcast System (EBS). The control center should also be linked by telephone and public address system with the interior of the plant so that warning signals and announcements can be relayed immediately to employees. In this connection, the emergency communications service should ensure that:

The warning signals can be heard by all employees at work.

Every employee receives warning in case of an attack.

Employees have been informed about the meaning of warning signals.

Employees have been told what to do and where to go in case the attack warning signal is given.

The company control center should function as the "command post" or "voice of management" for

the main headquarters. It should be able to communicate with:

The main headquarters complex, including company fallout shelters.

Alternate headquarters.

Emergency reporting centers for employees.

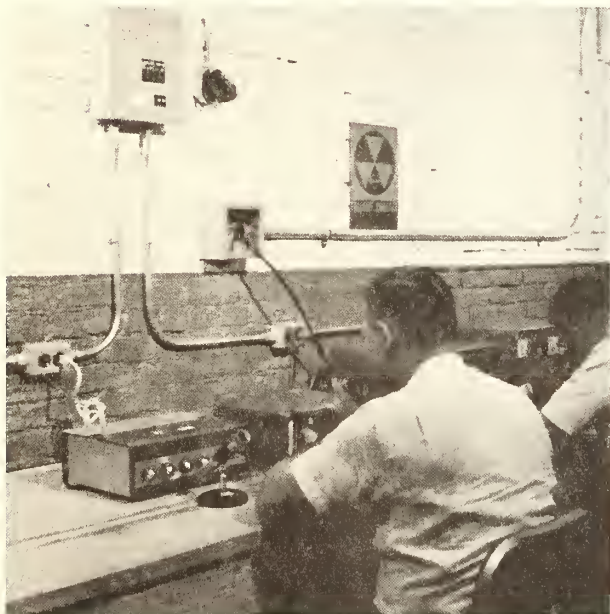
Other members of the mutual-aid association.

The local government's Emergency Operating Center (EOC).

To furnish the above support, the control center should operate or control all of the company's emergency communications including radio, telegraph, and teletype; the internal public address system; the telephone and switchboard system; security alarm devices; and the messenger service.

### **Increased Readiness Action — Communications**

**Review and (if necessary) update warning plans; check calling lists and telephone numbers for accuracy; review plans for disseminating warning in plant or mill; check readiness of equipment; establish radio watch.**



*The radio room at West Point-Pepperell's Lanett Mill serves as a combined county and company emergency operations center.*



*West Point-Pepperell's emergency telephone communications system can be connected to 14 outside trunk lines. The equipment shown in the picture is installed in the civil defense control room at the company's Langdale Mill.*



*Specially trained personnel of West Point-Pepperell's Langdale Mill attend a shelter manager's planning session. Initial training of the company's shelter managers was conducted by State civil defense officials.*



## SHELTER MANAGEMENT SERVICES

The shelter management service should be composed of:

- Shelter management personnel.
- Medical staff.
- Radiological monitors.
- Wardens.
- Welfare personnel.

The company's Shelter Manager is the administrator or commander of the fallout shelter area. His primary responsibility is to make shelter living as efficient and comfortable as possible under the circumstances.

In the *larger* companies where the shelter manager has a substantial staff, he can devote most of his efforts to administration, supervision, and management, while his staff performs most of the in-shelter work. In *smaller* companies, however, the shelter manager will assume the role of a working supervisor directly in charge of shelter activities. For an example of fallout shelter organization, see figure 8.

Although the actual construction or modification of the fallout shelter to meet established criteria generally is assigned to the engineering service, the planning phase should be a joint project with the shelter manager. For a fallout shelter layout of a large textile research center, see figure 9.

### Increased Readiness Action — Shelter

Cooperate with the local civil defense director per actions initiated by the local government to accelerate marking and stocking of public fallout shelters or to improve the radiation protection in existing facilities.

### The Shelter Manager's Planning Responsibilities

Ascertain the availability of employee/public fallout shelter at his company, and the time required to move employees from the work place to the shelter.

Prepare the company's employee/public shelter areas for occupancy, in cooperation with the plant manager, emergency coordinator, local civil defense officials, radiological defense officers, and public shelter management staffs.

Arrange with the local civil defense office to get special training in shelter management for himself and his staff.

Ensure that his shelter has a 14-day supply of:

**WATER**—(enough to provide each person with a minimum of 3½ gallons).

**FOOD**—(enough to provide 10,000 calories per person).

**SANITATION SUPPLIES**—(toilet tissue, sanitary napkins, and commodes).

Ensure availability of first aid or medical self-help equipment and radiological monitoring instruments in the shelter area.

When protected space in company facilities is licensed for use as public fallout shelter, the basic supplies to meet the above requirements may be obtained without charge through the local government from the Federal Office of Civil Defense.

Figure 8.

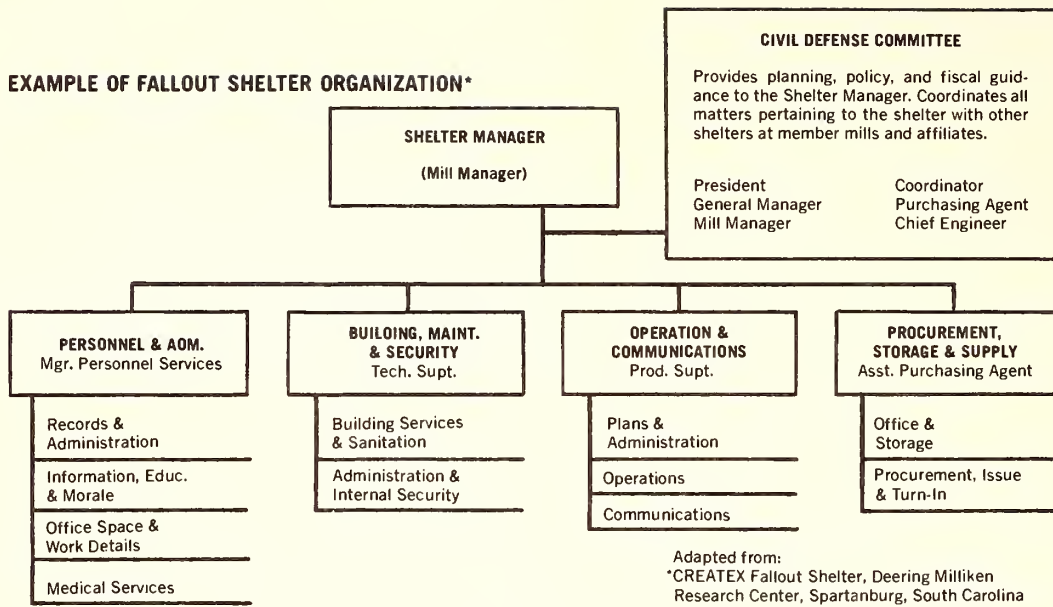
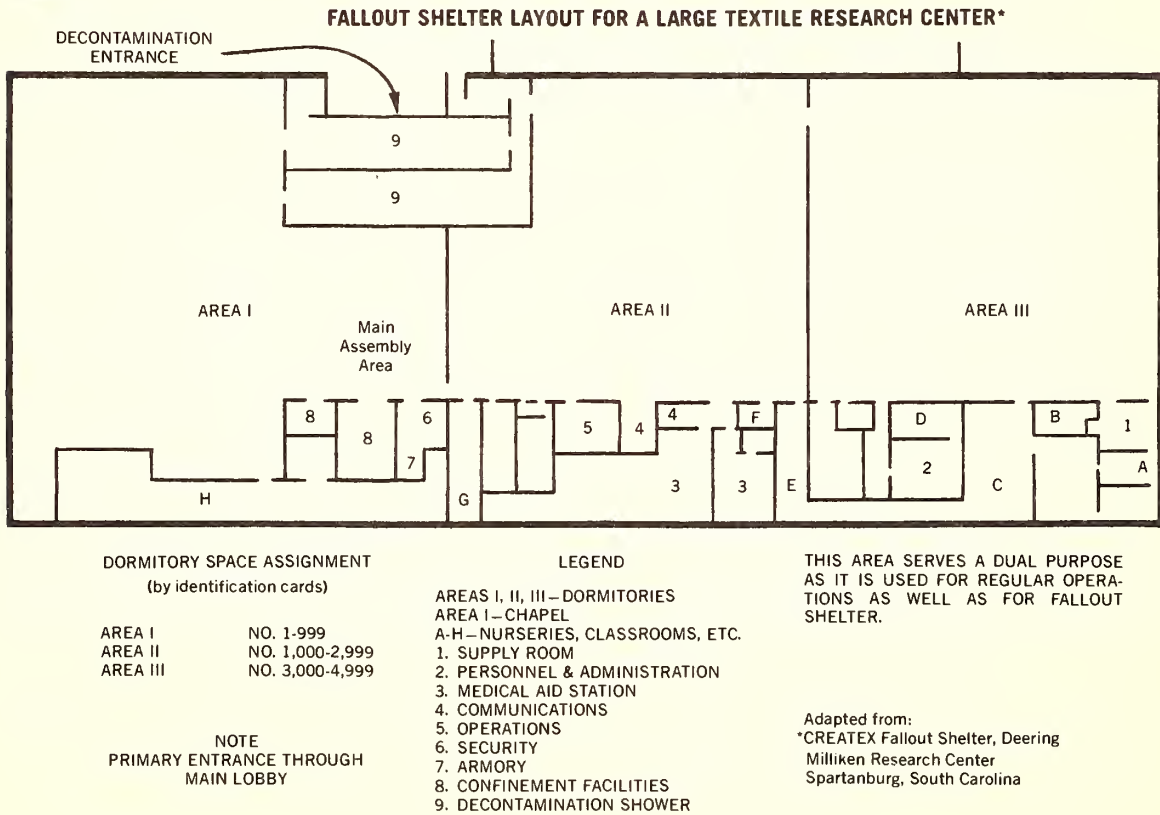


Figure 9.





## MEDICAL STAFF

The medical staff generally is composed of a plant physician, nurses, and special teams trained in first aid and emergency medical care. It should perform the following functions:

Arrange medical self-help training for as many employees as possible.

Provide medical treatment for routine injuries and illnesses, and be prepared to treat those who could be injured or become ill as the result of a nuclear attack (e.g., radiation illness).

Identify the special dietary or medicinal needs of employees that must be met during confinement in shelter; in cooperation with the persons involved, make appropriate arrangements for those needs.

Determine requirements for first aid and medicinal supplies and arrange to obtain them.

Establish at least one health station in every employee-public fallout shelter, and stock it with the necessary medical supplies.

Rotate those medicinal supplies that are subject to deterioration, and replace depleted stocks as quickly as possible.

Identify all casualties and arrange to remove the more critical cases to better-equipped treatment stations.

As soon as possible after an attack, survivors should begin collecting and caring for the injured. Since a major disaster might destroy or overtax the facilities normally used as mill dispensaries, auxiliary casualty stations should be established for this purpose, using such facilities as washrooms and change-houses or storerooms and canteens.

The emergency casualty stations should be prepared to screen casualties to determine which need priority treatment and to give treatment for shock, control of bleeding, relief of pain, dressing of wounds, and application of splints.

Welfare teams should collaborate closely with the medical teams in ministering to the injured.

After preliminary treatment, the injured should be identified and the more serious cases transferred to better equipped and staffed medical centers.

In addition to the treatment of casualties, it is necessary that the health of occupants in fallout shelters be maintained. It would be practically impossible to store sufficient medical supplies to meet all demands during a major disaster. To meet minimum emergency requirements, the company's normal medical stocks



*Dispensary at Munsingwear plant would serve as medical station for care of casualties in the event of a civil defense emergency.*



*This refrigerated medical cabinet is part of a 200-bed emergency hospital unit stored at West Point Pepperell's Shawmut Mill.*

should be expanded to an estimated six-month supply and maintained at that level. Items which may deteriorate should be rotated periodically. These normal plant emergency supplies should be augmented by the supplies acquired from the civil defense authorities for public shelter at the plant or mill.

### **Increased Readiness Action — Medical Staff**

**Review personnel assignments and availability of trained personnel; cooperate with local civil defense staff in accelerated medical self-help training; alert on-duty and off-duty medical augmentation personnel.**

## **RADIOLOGICAL MONITORS**

After the arrival of radioactive fallout following a nuclear attack, the safety of plant personnel will depend, to a large extent, on the ability of company radiological monitors to:

DETECT, MEASURE, AND REPORT THE INTENSITY OF LOCAL RADIATION.

COMMUNICATE WITH THE RADIOLOGICAL DEFENSE OFFICE OF LOCAL GOVERNMENT.

TAKE PROPER DECONTAMINATION PROCEDURES AND OTHER EFFECTIVE COUNTERACTION.

It is necessary to train monitors in the operation and maintenance of the following types of radiological instruments, which are issued to each public shelter licensed under the National Fallout Shelter Program:

Highly-sensitive, low-range geiger counters for measuring low levels of radiation on personnel, in food, and in water.

High-range radiological survey meters to be used by radiological monitors for measuring the intensity of radiation in areas inside or outside buildings that workers may have to enter after attack.

Self-reading radiological dosimeters for measuring the radiation exposure of radiological monitors, workers, and shelter occupants.

Radiological dosimeter-chargers.

These monitoring kits are supplied by the Office of Civil Defense, through the State and local civil defense organizations, for approved and licensed public



*The assistant plant manager of the Cone Mills Proximity Plant examines fallout shelter medical supplies furnished by the Federal Government.*

shelters. Each kit contains batteries and the necessary instruction manuals. Managers of plants who cannot make protected space available for the public should consider acquiring radiological monitoring instruments for use by their employees. Companies manufacturing these instruments can be located through your local civil defense office.

Radiological monitors can be selected from among company employees, and arrangements can be made with local civil defense organizations for their training. Radiological monitoring is directly concerned with the following aspects of shelter occupancy:

Minimizing exposure of shelter occupants from radiation by using those shelter areas affording the best protection.

Preventing radioactive contamination in the shelter.

Minimizing the effects of radiation on individuals who are required to make emergency trips outside the shelter.

Measuring radiation dose rates and doses as a basis for assisting the shelter management and the local civil defense organization in determining when emergency excursions can be made from the shelter and when the shelter occupancy can be terminated.

Undertaking and evaluating the effectiveness of necessary decontamination within the shelter.



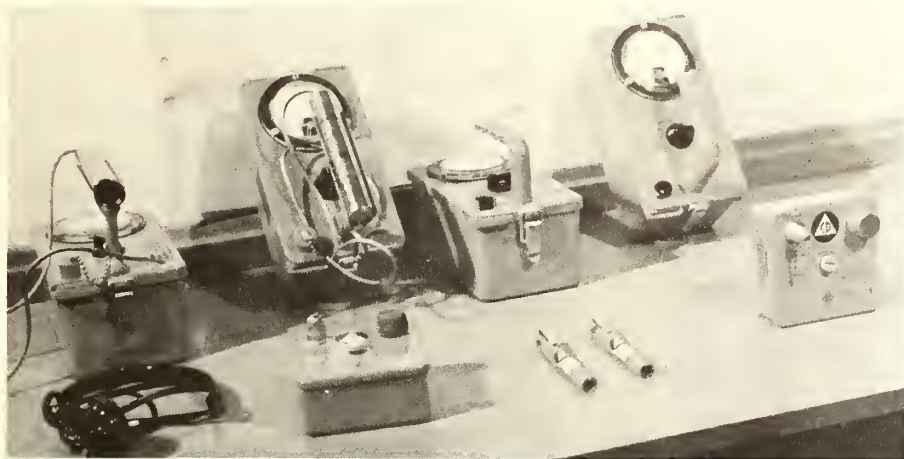
Since clothing, bedding, and shelter are essential to the well-being of the general population, it may be important that some textile producing facilities return to operation as soon as possible after an attack. Therefore, emergency plans should include possible decontamination of essential areas, buildings, and equipment. Personnel should be selected and trained to carry out this decontamination function after it is possible to leave the shelter.

Paved areas can be rehabilitated by hosing, sweeping, and scrubbing. Raw materials such as fibers, yarns, and cloth must be monitored to determine whether they have been contaminated with radioactive fallout. Contaminated raw materials should be isolated or moved to holding areas until the radiation level has decreased to a safe level for processing.

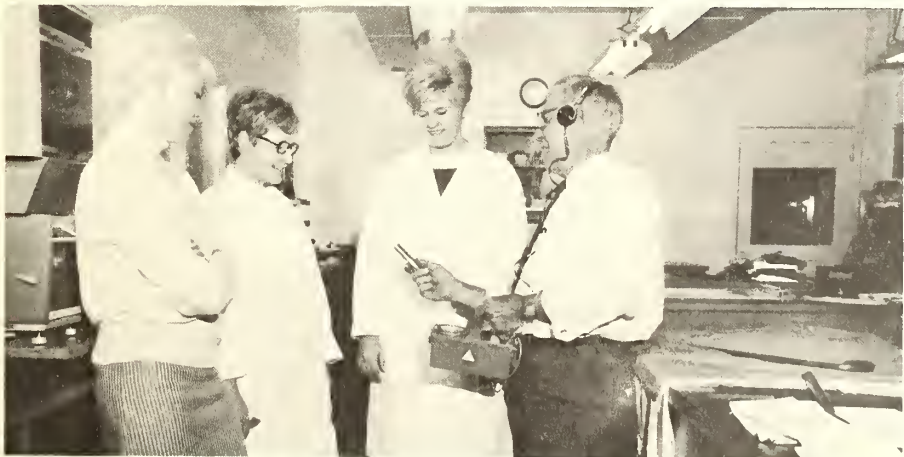
Monitoring information should be relayed periodically to all persons within the shelter so that they will know what is happening outside. The radiological monitors should also assist during emergency rescue and repair operations so that the level of radioactivity can be determined in the specific area of operations.

### **Increased Readiness Action — Radiological Monitoring**

**Review and update plans for radiological monitoring operations; review personnel assignments and alerting procedures for radiological monitors; assemble designated personnel for briefing and/or refresher training as appropriate; check readiness and operability of radiological monitoring equipment and correct deficiencies.**



*Radiological monitoring equipment at West Point-Pepperell's Langdale Mill includes geiger counters, survey meters, dosimeters, and dosimeter charger.*



*A company engineer demonstrates a radiological monitoring instrument to fellow employees at Munsingwear, Inc.*



A.



B.

*A. Civil defense signs at all major entrances tell employees and others that fallout shelter is available on the premises at the Striar Textile Mill.  
B. Employees of Burlington Industries, Inc., simulate shelter movement procedures at the company's Executive Office Building.*

## WARDENS

The plant management should designate wardens who will act as the traffic directors to control movement of people going to fallout shelters. Their primary function is to ensure that personnel movement is quick, orderly, and without panic.

The movement of civilians from dangerous and potentially dangerous areas in time of a civil defense emergency requires thorough planning, organization, timing, and supervision. Great confusion can result from the spontaneous and rapid movement of personnel when not properly directed. Therefore, the wardens should:

- Check the routes that employees must follow in going from their workplaces to the nearest fallout shelter.

- Establish and man prominent control points (e.g., exits, stairways, ramps, and elevators).

- Remove as many hazards as possible and carefully mark the others.

- Post fallout shelter directional signs at strategic locations and ensure that the employees understand them.

- Make special evacuation arrangements for special cases such as sick, handicapped, or panic-stricken employees.

- Provide for safety and security of the shelter occupants if guards are not available.

Because of the nature of their emergency assignments, many of the wardens are selected from the supervisory ranks.

Line management at all levels of an organization must accept the responsibility for the well-being of its personnel during a state of emergency. The acceptance of this responsibility must be made clear to all foremen and managers. The supervisor or foreman, more than any other person in management, is known by the workers because of daily contact. He is recognized as the symbol of order and authority.

To be effective during an emergency, supervisory personnel must know the procedures required by the



company's emergency operations plan. The supervisors should know the location of building exits, safety devices, first aid equipment, corridors, and stairways. A supervisor's authority may be extended over several departments or an entire building. He should make certain that all of those under his authority know the civil defense warning signals and the procedures to follow when the signal is given. The supervisor should familiarize himself with those special or individual problems within his group that might cause trouble during an emergency. Special attention should be given to handicapped workers or those requiring special medical attention while in shelter, such as diabetics.

The supervisor should explain the company's emergency plans to his department personnel so that each employee will know what is expected of him when an emergency arises. Supervisors should familiarize themselves with the community civil defense plans and provide appropriate information about the local plans to those under their supervision.

### **Increased Readiness Action — Wardens**

**Review personnel assignments and availability of designated employees; conduct necessary briefings; perform "walk-through" inspection of personnel movement routes to identify hazards or obstacles; take appropriate corrective action if necessary.**

## **WELFARE SERVICE**

The main responsibility of the company emergency welfare service is to assure the mental, emotional, and physical well being of its employees. It will function during the shelter period and probably during the immediate post-shelter period.

During the shelter period the welfare service should help to:

Feed the occupants and assign sleeping space to them.

Provide recreation and entertainment in the shelter by utilizing available talent and furnishing recreational materials (e.g. books, games, puzzles, sewing kits, etc.).

Provide religious or spiritual aids that employees would want in the shelter, and furnish spiritual guidance for those who request it.

Complete shelter rosters.

Locate separated members of families if communications are available, and keep families together in shelter.

Counsel employees with personal problems.

Provide special care for children, the aged, and the handicapped.

Provide informational service to keep employees currently informed on outside news, and thereby prevent rumors from spreading.

Provide as much privacy as possible in cases of childbirth, critical illness, or death.

During the immediate post-shelter period, the welfare service probably would have a variety of duties such as providing for:

Food procurement, preparation, and distribution. (This could be a major operation if employees are not able to return to their own homes within a short period of time after the radiological hazard has abated.)

Emergency lodging in temporary housing, such as tents, work areas, or other shelters.

Emergency clothing for hygienic or work purposes. (The textile industry can be especially helpful in this area.)

Counseling and assisting employees who have personal or family problems resulting from the disaster.

Establishing and operating a "Registration and Inquiry Unit" to help employees locate displaced relatives and family members.

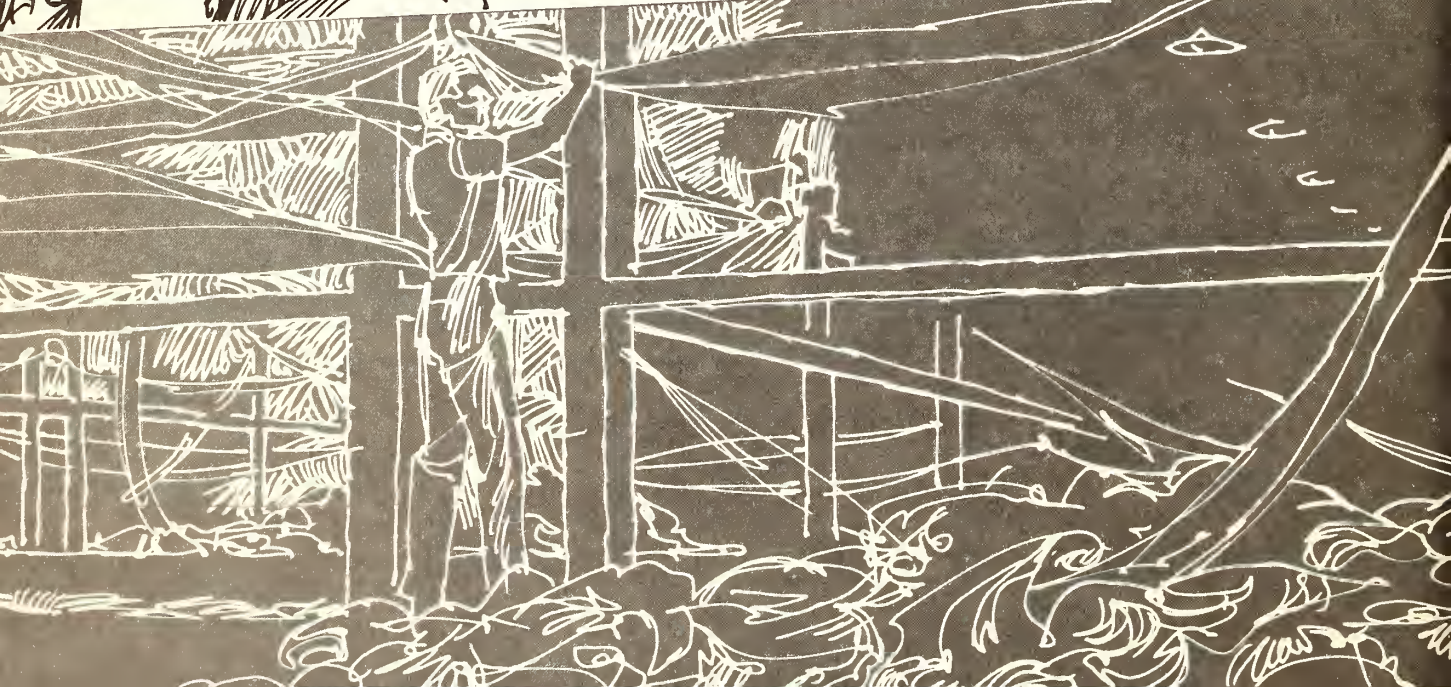
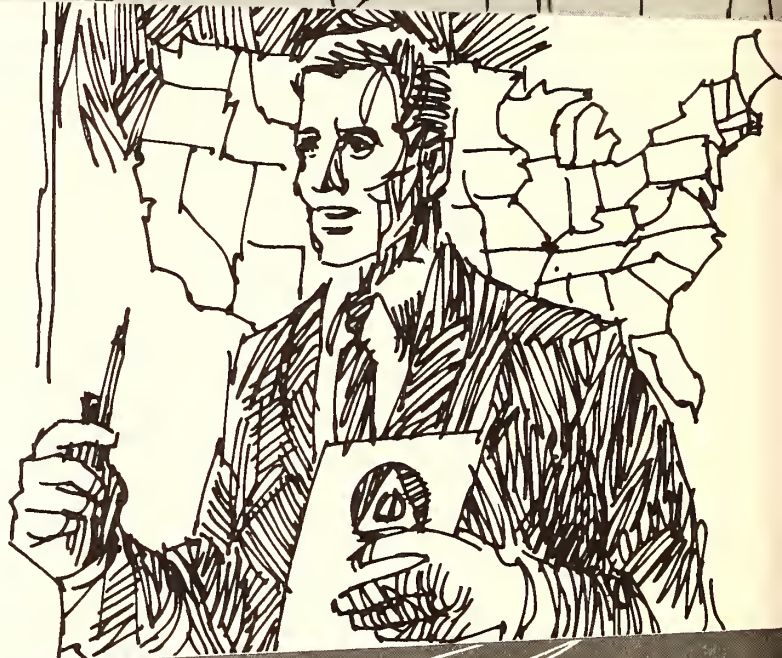
The extent to which a company welfare program should be developed depends on a variety of factors, such as the number of employees, the civil defense preparations made by the surrounding community, and management's decisions regarding the early resumption of production.

In general, the company welfare plan should include preparations that would help maintain the morale of employees both during and after shelter occupancy.

### **Increased Readiness Action — Welfare**

**Review emergency welfare assignments to employees; brief designated employees on plans for care of children, aged, or handicapped personnel in company shelters; check availability of supplies needed for performance of welfare functions.**







## GOVERNMENTAL PREPAREDNESS PLANS

Government preparedness plans are based on the proposition that each governmental and nongovernmental unit with emergency functions should provide for maximum self-sufficiency and continuity of operations so that it could operate in an emergency without reliance on higher authority.

### Federal Government

The four principal statutory enactments upon which civil emergency preparedness activities are based are, as amended:

THE NATIONAL SECURITY ACT OF 1947.

THE FEDERAL CIVIL DEFENSE ACT OF 1950.

THE DEFENSE PRODUCTION ACT OF 1950.

THE STRATEGIC AND CRITICAL MATERIALS STOCK-PILING ACT.

There are also many other specific legal authorities under which the various Federal agencies can prepare for and operate in a national emergency. For planning purposes, it may be assumed that whatever additional extraordinary Federal authorities are required for national survival would be available in that situation.

### State and Local Governments

The government of each State is responsible for the preparedness and emergency operations of the State and its political subdivisions, and for ensuring that such activities are compatible with those of the Federal Government. The government of each political subdivision is responsible for its preparedness and emergency operations in accordance with Federal and State emergency plans and programs.

While the Federal Government can indicate the kinds of preparedness actions the States should take, it is the responsibility of the State governments to provide the additional constitutional or statutory support, organization, and procedures for the conduct of those activities. The same is true of the need for local ordinances to meet the preparedness requirements of each locality.

Because of the vital postattack role of the local government, it must have the wholehearted cooperation—both preattack and postattack—of every citizen in the community.

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## Private Sector

The leaders of industry, agriculture, labor, and finance are responsible, in cooperation with appropriate government agencies, for planning and executing measures designed to assure the continued functioning or rapid restoration of the essential elements of the national economy.

All public organizations are expected to make such contributions to national, State, or community preparedness and survival operations as possible and appropriate.

## National Plan for Emergency Preparedness

The National Plan for Emergency Preparedness \* promulgated by the Office of Emergency Preparedness describes the roles of the Federal Government, the States and their political subdivisions, nongovernmental organizations, and individual citizens in preparing for a national defense emergency. Related guidance is developed and issued by Federal agencies in accordance with responsibilities defined in Executive Order 11490, which assigns emergency preparedness functions to the Secretary of Commerce.

## Office of Emergency Preparedness

The Director of the Office of Emergency Preparedness (OEP) advises and assists the President of the United States in determining policy for planning, directing, and coordinating the Federal Government's emergency preparedness and resource management activities. He provides staff assistance to the President in defining the emergency planning and operating roles of Federal departments and agencies; enlisting State, local, and private participation; mobilizing national support; evaluating progress of programs; and preparing reports to the Congress relating to civil defense matters.

The Office of Emergency Preparedness also coordinates preparations for the continuity of Federal, State, and local governmental operations in the event of attack. These plans, programs, and preparations are intended to assure the continued effective functioning of civilian political authority under any emergency condition.

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\* For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. 75 cents.

## Office of Civil Defense

The Federal Government, through the Office of Civil Defense (OCD), provides direction, coordination, and guidance for the nationwide civil defense program. In this connection, the Office of Civil Defense performs the following functions, among others:

Prepares, sponsors, and directs national plans and programs for the civil defense of the United States.

Provides for necessary civil defense communications and for dissemination of warnings of enemy attacks to the civilian population.

Studies and develops civil defense measures designed to afford adequate protection of life and property.

Conducts or arranges, by contract or otherwise, for training programs for the instruction of civil defense officials and other persons in the organization, operations, and techniques of civil defense; conducts or operates schools or classes; and provides instructors and training aids as deemed necessary.

Publicly disseminates civil defense information by all appropriate means.

Procures, constructs, leases, transports, stores, maintains, renovates, or distributes materials and facilities for civil defense.

Makes financial contributions, on the basis of approved programs or projects, to the States for civil defense purposes including, but not limited to, the procurement, construction, leasing, or renovation of materials and facilities.

## Other Federal Agencies

Certain civil defense functions have been assigned to other Federal departments and agencies by Executive Orders. The following examples indicate the types of facilities for which the various departments have emergency planning and civil defense responsibilities:

**DEPARTMENT OF AGRICULTURE:** Food processing facilities and rural civil defense activities.

**DEPARTMENT OF HEALTH, EDUCATION AND WELFARE:** Drug manufacturing and distributing facilities; hospitals, clinics; water plants, sewerage systems; schools, welfare institutions.

**DEPARTMENT OF INTERIOR:** Facilities producing and distributing electric power, petroleum and gas, solid fuels, and minerals.



DEPARTMENT OF COMMERCE: Manufacturing facilities (other than those assigned to the Departments of Agriculture and Interior). The Secretary of Commerce has delegated his functions to the *Business and Defense Services Administration (BDSA)*, which is responsible for those defense mobilization and emergency preparedness functions that relate to industrial production and distribution. Since BDSA acts as a focal point for most manufacturing industries in the United States, the proposed development of its functions, from a peacetime to a wartime basis, is outlined below.

### **Business and Defense Services Administration (BDSA)**

PEACETIME OR DURING A LIMITED WAR CONDITION WHERE A LIMITED NATIONAL EMERGENCY HAS NOT BEEN OFFICIALLY PROCLAIMED:

Provides industry with facility protection guidance.

Promotes a national program to: (a) stimulate disaster preparedness and control in order to minimize the effects of overt or covert attack; and (b) to maintain continuity of production and capacity to serve essential users in an emergency.

Administers the *Defense Materials System (DMS)*, which is a body of government regulations, orders, and procedures designed to:

- a. Direct the flow of materials and products to the Nation's "defense programs" by providing a priority for the purchase of materials by contractors, subcontractors, and their suppliers.
- b. Permit the maintenance of an administrative means for promptly mobilizing the industrial resources of the country in a limited or general war.

Offers priorities assistance to restore a defense plant damaged in a Presidentially-declared major disaster (e.g., flood, fire, hurricane, etc.) and thereby assists it to resume production.

Identifies those products and services, and their producing or supporting facilities, that are of exceptional importance to mobilization readiness, national defense, or postattack survival and recovery.

Conducts general supply-requirements studies and competent studies to determine the capability of industry to meet industrial production requirements under various emergency conditions.

Develops methods for assessing: (1) industrial production capability in the event of enemy attack, and (2) the dependency upon suppliers of materials, components, and services.

Conducts training and recruitment programs for the National Defense Executive Reserve \* in order to provide a capability at national and field levels to carry out Federal responsibilities with respect to the management of emergency industrial production and distribution.

LIMITED WAR WHERE A LIMITED NATIONAL EMERGENCY HAS BEEN OFFICIALLY DECLARED:

Issues a finding with approval of OEP under Sec. 101(b) of the Defense Production Act to permit use of priorities in support of essential civilian production, construction, and distribution programs.

Brings headquarters and field organizations to the strength required to meet the emergency through the partial activation of the BDSA complement of the National Defense Executive Reserve and through full utilization of field office staffs.

Initiates programs for expanding the capacity of production facilities or for increasing the output of existing facilities.

GENERAL WAR (NUCLEAR OR CONVENTIONAL) OR POST-ATTACK SITUATION WHERE A NATIONAL EMERGENCY OR STATE OF WAR HAS BEEN OFFICIALLY DECLARED OR IS EVIDENT BY AN ATTACK:

Provides automatic purchase priorities for the use of companies and persons producing essential items and furnishing essential services in obtaining from nonretail sources: maintenance, repair, and operating supplies; capital equipment; and production materials.

Limits the distribution of inventories of selected finished essential items to the filling of priority orders or by specific authorization of appropriate Federal and State authority to avoid the dissipation of existing supplies.

Activates the entire BDSA Executive Reserve.

Provides emergency priorities assistance to Federal, State, and local government agencies, and to industry in expediting industrial production and directing distribution to meet essential needs.

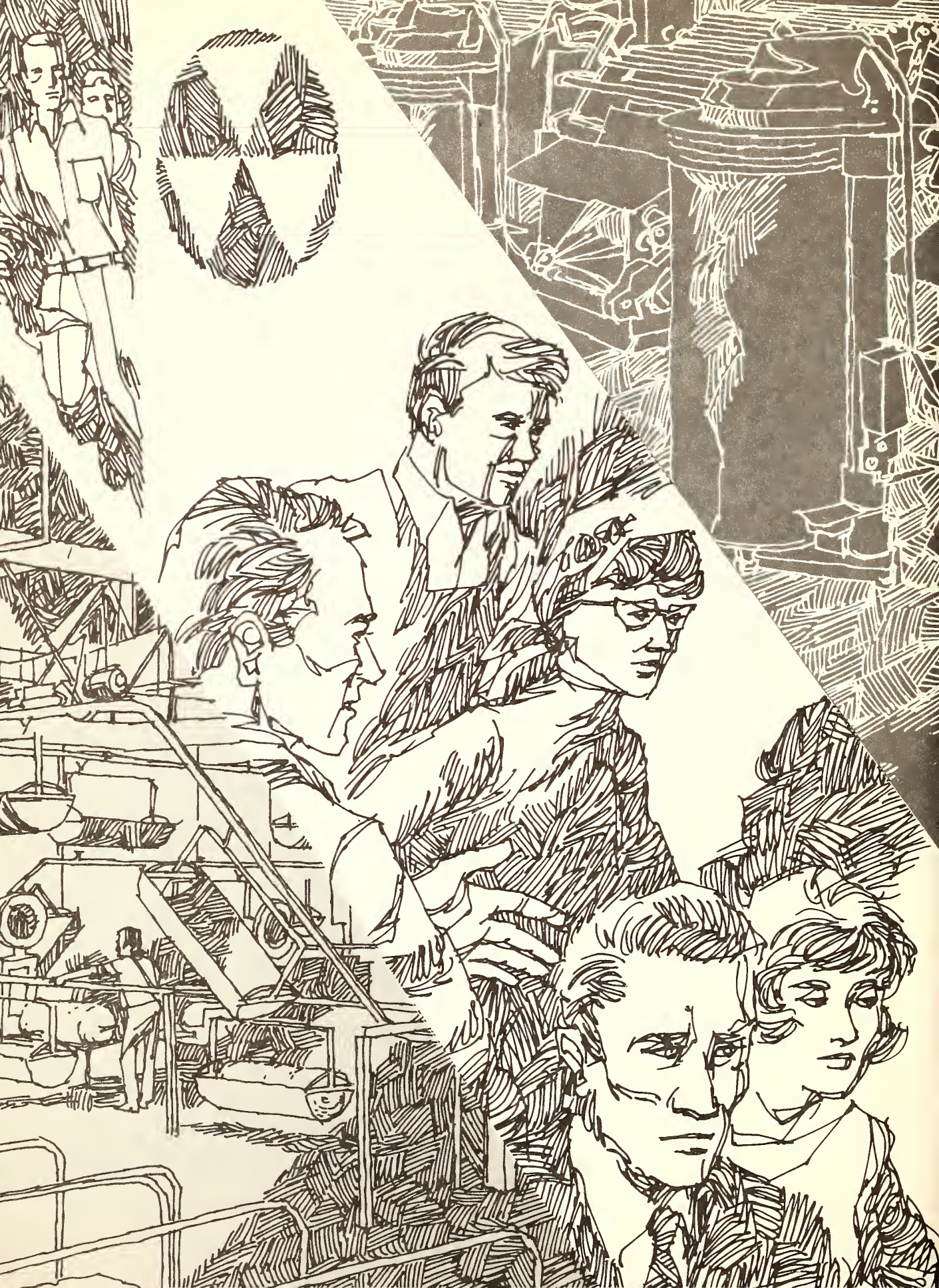
Issues regulations, as needed, to support restoration and rehabilitation programs.

Implements industrial production and distribution programs for essential resources for recovery of the country.

Initiates procedures for the rehabilitation of facilities after attack.

\* *The National Defense Executive Reserve Program*, in which the Business and Defense Services Administration has a major part, is a mobilization readiness program for recruiting and training business executives for emergency mobilization assignments. The Program was established under the authority of the Defense Production Act of 1950 as amended. Its purpose is to recruit and train executives and professional persons to serve the Government in key civilian positions at local, regional, or national headquarters during periods of national emergency.







## Industrial Civil Defense Case Studies



West Point Pepperell

### THE WEST POINT-PEPPERELL STORY

*(As related by Robert I. Uhl before the House Armed Services Committee on June 6, 1963)*

My company, the West Point Manufacturing Co.\* is in the business of manufacturing textile fabrics, and I am here in response to the invitation to appear before this committee.

Although the civil defense program has been considered . . . for a number of years, it was at the time of the Cuban crises in October 1962 that our company's civil defense program was inaugurated.

It was felt that if preparations were made for fallout shelters we would at least have the assurance that we had done what could have been done in behalf of protecting our employees and our community from the threat of fallout. Our president, Mr Lanier, has stated that 'West Point has established a civil defense program that will be as permanent as the safety program and as important as any other phase of our work.'

An engineering study presented by Robert & Co. indicated that with certain modified conditions, potential spaces were available in these buildings for approximately 30,000 people, offering them protection factors ranging from a minimum of 23 to a maximum of 375. This study took into account the location of machinery in some shelter areas, and in these instances allotted more usable floor area per person for survival conditions than the 10 square feet per person normally allocated.

The engineering report also revealed that the machinery which is placed on the upper stories of our multistoried buildings is a factor which further contributes to the protection factor and, according to the engineers, actually offers considerable protection to the shelter spaces on the lower floor.

\* Now West Point-Pepperell, Inc.

The massive walls of our buildings, which in some cases are 38 inches of masonry construction, offer excellent fallout protection, particularly after the modification of bricking up the window openings in the shelter areas. Other modifications which were calculated included the addition of ventilation to the shelter areas. It was found that by this addition of ventilation the number of spaces could be increased greatly.

To assure the operation of the ventilation system, it was necessary that emergency generator equipment be provided or, in cases where it was already available, that it be wired into the shelter area so that ventilation could be provided during interruptions of the public power supply.

At this time, the West Point Manufacturing Co. is involved in the phase of its program which includes fully developing the appropriate shelter spaces indicated by the Robert & Co. report. As this program moves along, we hope to arrive, ultimately, at sufficient space for the sheltering of all employees and residents of our entire valley community.

Since the program was inaugurated, the requirements of the civil defense authorities in the shelter stocking program have been changed from a minimum protection factor of 100 to the current minimum protection factor of 40. The first phase of the Government stocking program has provided us with supplies in one of our mill locations for 717 people. These supplies have been added to our mill supply and will be used in conjunction with the 1,000 cases of survival biscuits which were initially purchased by West Point and designed to provide at least 1 day's supply of biscuit for the number of people who would likely seek shelter in our buildings.

Protected water storage has been considered, and alterations have been made in the piping of the buildings and means by which protected storage areas of water might be made available for emergency drinking during a stay in the fallout shelters.

The organization of our company program: In developing the West Point Manufacturing Co. civil defense program, we have found the publication published by McGraw-Hill Publishing Co., entitled "Nuclear Attack and Industrial Survival" to be of great help to us, along with the civil defense publications which have been provided by the local civil defense people.

As a rundown of our company organization for civil defense we have designated the plant manager in each of these areas as a survival coordinator. He would work with the other plant managers, or survival coordinators, in establishing the policy for the company program. At his respective mill, the survival coordinator would head the group of people who would establish the organizations and improve the shelter in his respective mill area.

Committees have been serving at the mill level and working together on a companywide basis on each committee responsibility. The following committees have been established:

(1) *Engineering committee:* In most cases the plant engineer or master mechanic is in charge of the modifications of the building to provide appropriate shelter space. He also has the responsibility of operating the physical and mechanical equipment necessary at the time of occupancy as a shelter.

(2) *Shelter manager:* The shelter manager has been designated as a person in the plant who would, at the time of occupancy as a shelter, be the person in charge of the operation of the shelter. His responsibilities would be to see that the people were properly placed in the shelter and that their needs, while in the shelter, were met insofar as possible under survival conditions. A shelter manager's school has been held by the State civil defense authorities to train our personnel.

(3) *Communications committee:* Operating under the engineering committee would be a communications committee which would take charge of providing for and handling the required communications. It is our hope that the communications setup would provide auxiliary communications in addition to the telephone system. By means of radios operating with emergency generator supply, or batteries, each shelter could keep itself informed of activities outside that particular shelter.

(4) *Radiological committee:* This committee is headed by one of the electronic engineers from our Research Division. He has completed civil defense training on the subject of radiology and is now serving as the local county radiological officer, and is licensed by the Atomic Energy Commission. He has trained personnel at each of our mill locations in the operation of the various radiation measurement instruments. This is a very vital group in a fallout shelter program, and we feel that a knowledge of radiation

levels will be most helpful in placing people where they might obtain maximum protection. People confined to a shelter would certainly be assured by the knowledge that this invisible danger above them could be measured and their safety enhanced.

(5) *Fire and rescue committee:* These people have been trained and added to the fire brigades which already existed in the company, and their training has been extended to cover all phases of firefighting and rescue work. These trained people would be very helpful in many other areas of civil defense in addition to fallout shelter use. The county civil defense authorities have provided a group of these trained men with some pieces of equipment which have already been useful in our area for rescue work where persons have been lost or drowned.

(6) *Health committee:* This committee is made up of the industrial nurses who are customarily employed by the company. To their ranks have been added other people who could help in the field of health and other phases during a fallout shelter stay.

The Red Cross has been very cooperative in their assistance to this committee. Along with Red Cross training, we hope to add classes in the medical self-help training course which is being provided through the civil defense organization.

(7) *Transportation committee:* This committee has been established to aid in the moving of supplies, and so forth, as we develop our shelter area. During an emergency period it would be charged with the responsibility of moving people who might be invalids or would need aid or assistance in getting to a shelter.

(8) *Security committee:* A great deal of emphasis is being placed on this security group. This will be the group of people who will be out in the shelter area and, in a sense, will be in the location where the civil defense program will actually meet the people who are making use of the shelter spaces. This committee, made up of the chairman of the security group in each mill location, is in the process of developing a training manual to instruct 40 to 50 people in each mill in the various phases of the program. They could then be placed in strategic locations in the shelter and provide direct contact with the people in the shelter. This will assure the shelterees of confidence in the program, while maintaining as much discipline and assurance as might be required for the mutual safety and protection of all involved.



As mentioned above, we feel that our civil defense program will be a permanent program. While our present organization of it is set up as has been outlined above, we shall continue to develop the program and have a constant arrangement for training and for providing the continuity of these committees.

This is necessary so that at any time individuals will be organized to perform these various functions during an emergency period. It is a part of our ultimate goal to assign specific family spaces within the shelter for the purpose of helping families get together, as well as for the purpose of providing order and organization to the shelterees as they seek shelter in our mill buildings.

From what we know of fallout, we believe that to have massive buildings available in a community and not be able to utilize them in a time of need would be a real tragedy. . . .

Persons seeking shelter in our mill buildings which are being modified would be provided the safety to survive and rebuild our community, our company, and our Nation during the very difficult period which would follow a nuclear war.



### THE DEERING MILLIKEN STORY

*(As related by Colonel Marshall H. Strickler, USAF Ret. before The House Armed Services Committee on June 17, 1963)*

I have been asked to explain the fallout shelter preparations made at the Deering Milliken Research Center in Spartanburg, South Carolina. The Deering Milliken Research Center is the largest privately or publicly supported textile research facility in the world. It is known as CREATEX, and is located on a 650 acre tract about six miles north of Spartanburg, South Carolina. It is dedicated to accomplishing basic and applied textile research, aimed at maintaining American preeminence in the textile field.

In the fall of 1961 a decision was made to erect an experimental cotton spinning mill adjacent to the research center as one of the CREATEX complex of buildings. This mill was to be a prototype facility equipped with the latest and most advanced textile machinery in the world. Important lessons on means of improving textile manufacturing processes were expected to accrue from this experimental mill.

At the time the decision to construct the prototype mill was made, this nation was engaged in grave international discussions concerning the status of Berlin. The question of fallout shelter was one of serious public concern. Sharing this concern with and for his employees, Mr. Roger Milliken asked whether provision of fallout shelter facilities in the basement of the new mill might be feasible. Study by the corporate staff disclosed that adequate shelter could be provided if nominal changes and additions were made in construction plans. Major modifications included:

1. Construction of a core shelter area.
2. Provision of emergency water, power and ventilation facilities.
3. Installation of communications facilities, radiation detection gear, and decontamination stations.

The proposed mill basement would be completely below grade, and with these changes, plus proper planning, it was felt an adequate degree of protection could be provided.

In April 1962, work commenced on our shelter plan. After reviewing the Civil Defense check list for Industrial Survival, management appointed a Civil Defense Coordinator, reporting directly to the General Manager of the Deering Milliken Service Corporation, CREATEX. The coordinator was given broad authority to work with all members of the Research and Service Corporations, and the Prototype Mill—the three major operating units at the CREATEX location—in preparing the shelter plan.

As a first step, a basic plan was prepared, following the traditional five-paragraph military operations plan. Participating units were identified. Broad planning assumptions and guiding criteria were established. For example, it was assumed that Donaldson Air Force Base, Greenville, South Carolina, then home of the 63rd Troop Carrier Wing, would be the closest military target; and that Atlanta, Georgia, including the Lockheed Aircraft plant at Marietta, would certainly be a potential target. Fallout from strikes at these target areas could be expected to reach Spartanburg from two to four hours after any attack, depend-

ing upon upper winds and the weapons and attack techniques employed. Our problem was to provide adequate shelter for two weeks for approximately 500 employees and their dependents—a total of about 1,600 men, women and children. If the assumption was valid that two to four hours' time would exist before fallout arrived, all employees would be able to drive to their homes, pick up their families, and return safely to the shelter.

A shelter organization was designed, and manned with key executives selected from all CREATEX units on a basis of functional proficiency and availability.

Next, a detailed explanation of the duties and responsibilities of each shelter section was prepared as annexes to the basic plan.

The plan was completed in about three weeks and after review, was approved by management.

A budget was then prepared, based upon the approved plan. Every effort was made to anticipate requirements realistically and budget accordingly. From past experience it was concluded that provision of food, water and medicines would be insufficient for adequate survival of the shelter population. The severe psychological and physiological problems always prevalent under attack conditions call for extraordinary controls and unusual safeguards for any shelter group. Without careful preparations, chaos, pestilence and uncontrolled mob action can be expected. With this in mind, nominal morale supplies were planned. A shelter menu, (substantially larger yet less expensive than normal survival crackers), was selected. Active shelter working groups were identified. The budget was designed to accommodate all of these. It totalled \$36,322, and was approved in June 1962. Actual shelter preparations have totalled about \$62,000—or \$38.75 per potential shelter occupant.

During June, July and August each shelter section accomplished its detailed planning tasks. These tasks were performed as additional duties by all section leaders and their associates. Progress was recorded weekly on master charts.

Realizing the wide variety of talents and abilities which any large group of people possesses, an effort was made to determine those talents among our potential shelter occupants. Subsequently, completed forms were applied to a McBee Key Sort Card. The cards were punched to allow rapid identifications of any talent required. These cards are filed alphabetically in the shelter and kept current at all times.

Color-coded, numbered identification cards were then issued. The colors identified the corporate affiliation of the employee and his dependents for use in assigning dormitory areas. The number is related to supply issue and control, and is keyed to the master McBee card. These cards serve a dual purpose as identification cards for after-hours access to the CREATEX complex.

A manual of Administrative Instructions was prepared and stored in the shelter for issue to all adult occupants upon their arrival. These instructions outline the shelter schedule, set up the rules of conduct, establish standards of shelter sanitation and cleanliness, prescribe supply issue procedures, and even include scriptural selections for the spiritual solace of Protestants, Catholics, and Jews.

Building Maintenance and Security had an important group of tasks. Two deep wells were drilled and terminated in a communicating tunnel which serves as part of our core shelter area. A 15,000 gallon underground emergency water tank was installed, serviceable either by the city mains, the wells, or both. If the storage water should become contaminated, it can be by-passed into toilet and sewage lines, and potable water can be drawn directly from the wells.

Two emergency generator sets were installed, each of which can provide shelter power requirements.

Fire brigade and security supplies were stocked.

Radiation detection equipment was procured and installed adjacent to the building, with remote readout in the security office.

The Operations and Communications section operates the command post.

An emergency switchboard was procured and is positioned in the operations center. All telephones in the shelter area and the CREATEX location can be reached through this switchboard. In addition, if commercial telephone lines remain standing, most member mills might be available through the Deering Milliken tie-line network.

If telephones fail, radio communications facilities are available in the core shelter area. With this equipment, our shelter operators, (practicing amateur radio enthusiasts) have spoken with all parts of Europe, Asia, Alaska, Greenland, and Australia. They have single side band capability, and can operate on all wave bands and frequencies, including VHF. The importance of this equipment as a means of acquiring intelligence cannot be over-emphasized.



Our menu is not too esthetic, but will provide each occupant with about 1600-1700 calories a day for two weeks, (substantially larger than that normally contemplated for shelter living). It is suitable for consumption by the very young and the very old and requires neither refrigeration nor cooking. The psychological benefits of an adequate diet under wartime conditions are tremendous.

Our medical supply list was selected from an Air Force publication designed to guide base commanders. Three doctors and their nursing staff retained by Deering Milliken are members of our shelter staff and will be available to treat sick and wounded and perform mortuary duties.

From this brief review it can be seen that the planning and preparation task could be compared to that of designing a small city for initial and simultaneous occupation. The crowd control and morale planning problems are similar to those faced by a cruise director—but complicated immeasurably by a lack of facilities and by the anticipated wartime psychosis.

The shelter layout protection factors were carefully and conservatively calculated by our own nuclear physicists and validated by outside consulting experts.

By the end of September 1962 our shelter planning was complete. All that remained was to communicate the details to all potential beneficiaries. Initially, all employees were informed of the shelter provisions through a series of detailed briefings. Subsequently, a CREATEX Fallout Protection Guide was prepared and distributed to all.

Since distribution of the guide, each annex in our basic shelter plan has been augmented by the appendices necessary to make the plan an effective operating document. Two copies of the master plan are stored in the shelter. In this way, the Shelter Manager can be confident of having all essential elements of information available should the shelter be activated. And, if key shelter officials are not available for one reason or another, all instructions for shelter operation and continuity are contained in the master plan for use by any designated replacement.

To conclude, we believe that the CREATEX Fallout Shelter can provide a high degree of protection for all occupants, should the need arise. We also feel that by this sort of careful and detailed planning, many of the problems normally anticipated in mass, extended shelter occupancy can be coped with successfully or avoided entirely.

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NOTE: Unless otherwise specified, all references listed below are available upon request to the Industrial Readiness Staff, Office of Mobilization Readiness (IM-BDSA), U.S. Department of Commerce, Washington, D.C. 20230.

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